

SITE ASSESSMENT SECTION

PRELIMINARY ASSESSMENT SUPER AUTO SALVAGE YARD U.S. EPA ID: IND984928440 SOUTH BEND, INDIANA ST. JOSEPH COUNTY

EPA Region 5 Records Ctr.

MARCH 15, 1994

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

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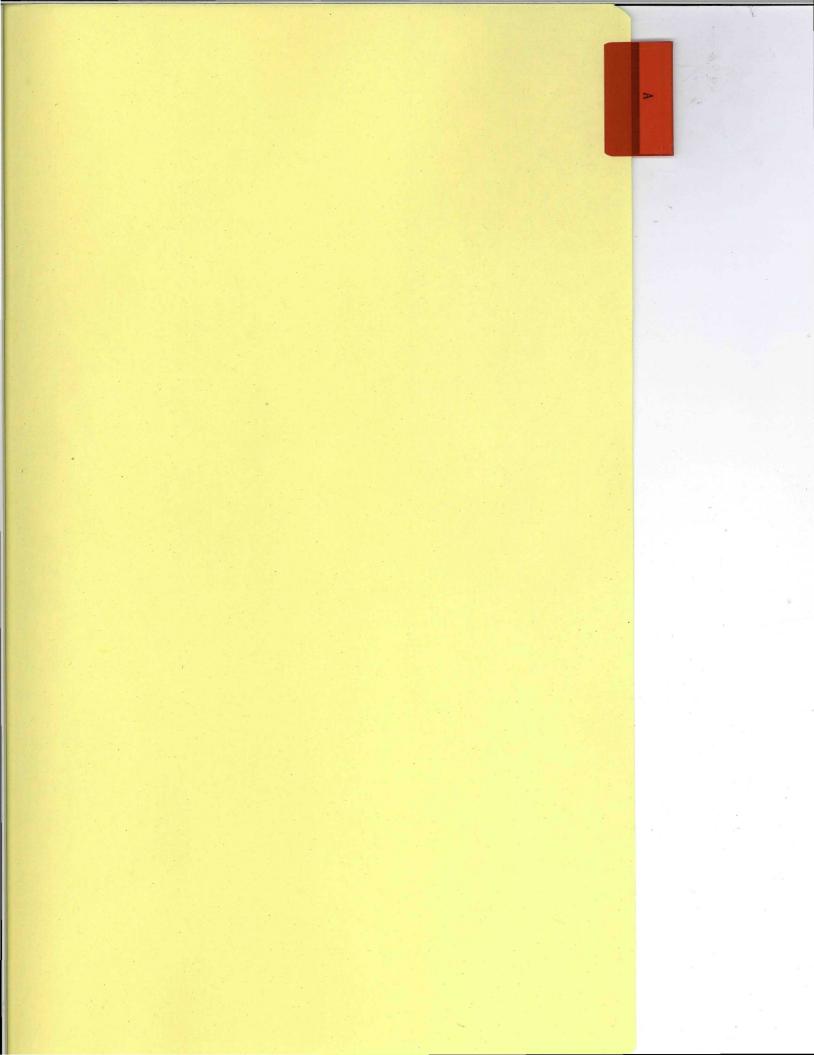
HARRY E. ATKINSON, CHIEF SITE INVESTIGATION SECTION

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SUPER AUTO SALVAGE YARD

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SUPER AUTO SALVAGE YARD

SITE NARRATIVE

INTRODUCTION

Under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA), the Indiana Office Department of Environmental Management (IDEM), Environmental Response (OER), Site Investigation Section conducted a Preliminary Assessment (PA) at the Super Auto Salvage Yard site The purpose of the investigation in St. Joseph County, Indiana. was to obtain information concerning conditions at the Super Auto Salvage Yard site sufficient to determine the need for additional CERCLA/SARA or other appropriate action. The scope of the PA included a review of file information, investigation comprehensive target survey and an on-site reconnaissance (October 1993).

SITE DESCRIPTION, OPERATIONAL HISTORY AND WASTE CHARACTERISTICS

Site Description

The site is located in Section 24, Township 37 North, Range 2 East in the city of South Bend, St. Joseph County, Indiana at 3300 South Main Street (Figure 1, Ref. 3). The site's geographic coordinates are 41° 38′ 32.50" North Latitude and 86° 15′ 8.30" West Longitude (Ref. 3, 4). To reach the site, travel south of the City Hall on Main Street approximately 2.30 miles. The facility is located west of Main Street (Ref. 3).

Joseph County is characterized by a wide variation St. by Lake temperature modified Michigan, which is located approximately 30 miles to the northwest. Increased cloudiness, snow and rain combined with a reduction of temperature extremes in both summer and winter are the primary effects Lake Michigan has on the climate. The prevailing wind direction is south-southwest in summer and fall and north-northwest in March and April. temperature in St. Joseph County reaches 90°F or higher on an average of ten days per year and 0°F or lower on an average of eight days per year. Levels of precipitation are fairly constant throughout the year; in February, the county averages approximately 2.0 inches of rainfall and 3.5 inches in the spring and summer (Ref. 5). The site, itself, is located in an area of minimal flooding (Ref. 6).

Operational History and Waste Characteristics

The active auto salvage operation occupies fourteen acres of land in an industrial area of South Bend. Super Auto Salvage Yard has been operating at 3300 South Main Street, South Bend, Indiana since the late 1930's to the early 1940's and is still active today. The site is roughly fourteen acres and has two buildings within the fenced boundaries. The salvage yard sells automobile parts for a variety of vehicles. Approximately % of the company's business is The other % of the from distributing new automobile parts. company's business is obtained from dismantling used vehicles and selling the parts. There are about 1,400 used cars at the site. Super Auto Salvage Yard annually processes 400 cars. automobiles on-site are typically kept for three years. When used cars are obtained, they are set aside until a contractor reclaims the freon from them. Waste oils from the used cars are drummed and then eventually burned in the engine garage. Oily stained soil near the engine garage was reported during the site reconnaissance. Cars are dismantled on the southern edge of the property (Ref. 7).

Mr. Harold Silberman owns the property at 3300 South Main Street, South Bend, Indiana. Mr. Silberman leases the property to Mr. Paul Schultz who currently runs the salvage operation. The City of South Bend leases the southwestern part of the property. The city tows abandoned cars the leased property. Mr. Paul Schultz stated that Super Auto Salvage Yard has only salvaged used motor vehicles throughout its history (Ref. 7).

GROUNDWATER PATHWAY

Hydrogeologic Setting

The parent materials primarily found in St. Joseph County were placed by glacial deposition or by melt water from the glaciers. The properties of the parent material may vary greatly with small areas contingent on the mode of deposition. Within St. Joseph County, the predominant parent materials were deposited as glacial till, outwash, alluvium or organic material. Site specifically, the soils are of the Tyner-Oshtemo association. Soils within this association are deep, nearly level to strongly sloping, well drained, coarse textured and moderately coarse textured soils on outwash plains and terraces. Tyner soils are deep, nearly level to strongly sloping and well drained. Oshtemo soils are typically deep, nearly level to strongly sloping, and well drained. soils within the association include Chelsea, Brems, Maumee, Brady, and Tedrow soils on the outwash plains as well as Tracy and Fox soils on the outwash plains and terraces. Within the Tyner-Oshtemo association, soil types from the Hillsdale Series, Oshtemo Series and the Tyner Series are found on-site (Ref. 5).

The Hillsdale Series of the Tyner-Oshtemo association is comprised of deep, well-drained, nearly level to strongly sloping soils on till plains and moraines. The soils are primarily found between soils that formed in glacial till and those that formed in outwash. Hillsdale soils are characterized by moderate permeability coupled with a moderate available water capacity. The surficial layer has a moderate organic matter content. Runoff is slow to rapid. The

Hillsdale Complex (HeC2) with six to twelve percent eroded slopes is found on the east and south to southeast area of the site. Drought and erosion are of major concern with this soil type (Ref. 5).

The Oshtemo Series of the Tyner-Oshtemo association is comprised of deep, well-drained, nearly level to strongly sloping soils on outwash plains and terraces. Oshtemo soils are characterized by a moderately rapid permeability combined with low available water capacity. The surficial layer has a high organic matter content. Runoff is slow to medium. Oshtemo sandy loam (OsC2) with six to twelve percent eroded slopes is found on the east to northeast area of the site. The soils are located in elongated areas on short side slopes. Drought and erosion are of major concern with this soil type. During arid periods, blowing soil is a hazard if no protective cover is in place (Ref. 5).

The Tyner Series of the Tyner-Oshtemo association is comprised of deep, well-drained, nearly level to strongly sloping soils on outwash plains and terraces. The soils are located on raised flats and ridges. Tyner soils have a rapid permeability rate coupled with a low available water capacity. The surficial layer has a moderate organic material content. Runoff is slow to medium. The Tyner loamy sand (TYA) with zero to six percent slopes of the Tyner Series is found on the west and north portions of the site. Drought is of major concern with this soil type. During arid periods, blowing soil is a hazard if there is no protective cover in place (Ref. 5).

Groundwater Targets

The majority of the population within a 4-mile radius of the site relies on municipal groundwater supplies retrieved from eleven well fields throughout the South Bend area, operated by the St. Joseph County Water Department. The groundwater is recovered from the St. Joseph Aquifer. Of eleven well fields, six are located within the target distance limits. Well locations are depicted on the 4-mile radius map provided in Appendix E. The South Station well field is located on property adjacent to the site within zero to 1/4 mile. The well field has four active wells: South #1 is at a depth of 93 feet and has a water capacity of 3,100,000 gallons per day (gpd); South #2 is at a depth of 92 feet and has a water capacity of 2,200,000 gpd; South #3 is at a depth of 100 feet and has a water capacity of 2,300,000 gpd; and South #4 is at a depth of 108 feet and has a water capacity of 3,800,000 qpd. The Erskine well field is located within one mile southeast of the site. The well field has one active well and one inactive well due to PCE contamination. Erskine #1 is at a depth of 175 feet and has a water capacity of 800,000 gpd and the Erskine #2 is at a depth of 116 feet and has a water capacity of 2,800,000 gpd. The Rum Village well field is located within one mile of the site. The well field has one active well and one inactive well due to TCE contamination. Rum Village #1 is at a depth of 137 feet and has a water capacity of 1,500,000 gpd and Rum Village #2 is at a depth of 126 feet and has a water

capacity of 2,200,000 gpd. The Olive Street well field is located The well field has six within three miles northwest of the site. two wells are active, two are closed due contamination and two are closed due to high hardness. The depth and water capacity for each Olive Street wells is: Oliver #1 is 168 feet and 3,000,000 gpd; Oliver #2 is 164 feet and 3,250,000 gpd; Oliver #3 is 155 feet and 3,500,000 gpd; Oliver #4 is 192 feet and 3,000,000 gpd; Oliver #5 is 158 feet and 3,000,000 gpd and; Oliver #6 is 168 feet and 3,000,000 gpd. The North Station well field is located within four miles north of the site. The well field has three active wells: North #5 is at a depth of 104 feet and has a water capacity of 3,000,000 gpd; North #6 is at a depth of 106 feet and has a water capacity of 3,000,000 gpd and; North #7 is at a depth of 112 feet and has a water capacity of 3,000,000 qpd. The Edison well field is located within four miles northeast of the site. The well field has four active wells: Edison #1 is at a depth 206 feet and has a water capacity of 4,000,000 gpd; Edison #2 is at a depth of 200 feet and has a water capacity of 3,100,000 gpd; Edison #3 is at a depth of 204 feet and has a water capacity of 3,400,000 gpd and; Edison #4 is at a depth of 196 feet and has a water capacity of 3,600,000 gpd. The municipal water supply is a blended system and no well field nor any individual well can or does contribute more than 40 percent of the total output of the system. Approximately 115,000 people are serviced by the 31 active wells within the eleven well fields. Each of these active wells services an estimated 3709.67 persons (Ref. 8). Individuals not serviced by the municipal supply receive water from private residential wells.

Groundwater Conclusions

A release of potentially hazardous substances to the groundwater from the Super Auto Salvage Yard is possible. Due to the moderate to rapid permeability of the site-specific soils, the close proximity of the municipal well field, and the recharge zone of the municipal wells encompassing the site, widespread migration of potential contaminants is feasible.

SURFACE WATER PATHWAY

Hydrologic Setting

Across St. Joseph County lies the drainage divide between the Mississippi Basin and the Great Lakes Basin. Approximately % of the drainage enters into the Kankakee River System, which flows into the Mississippi River, while the other % of the drainage enters into the St. Joseph River System which flows into Lake Michigan. Yellow River, Grapevine Ditch, Niespodziany Ditch, Pine Creek and Yellow Bank Creek are the primary tributaries of the Kankakee River. Baugo Creek, Juday Creek, Eutzler Ditch, Woodward Ditch and Mowman Creek are the primary tributaries of the St. Joseph River (Ref. 5).

Site specifically, runoff from the site either percolates through the permeable soils or enters into the combined sewer system that flows to the wastewater treatment plant (Ref. 7).

Surface Water Targets

No surface water targets are affected by potential contaminants at the Super Auto Salvage Yard site. A migration route to Bowman Creek, the nearest surface water body, does not exist (Ref. 7).

Surface Water Conclusions

A release to the surface water from potential hazardous substances at the Super Auto Salvage Yard is not suspected. Site runoff enters into the combined sewer system or the ground, not into a 15-mile surface water pathway.

SOIL EXPOSURE AND AIR PATHWAYS

Physical Conditions

The Super Auto Salvage Yard is an active facility occupying approximately fourteen acres in an industrial area of South Bend. Located on-site are the main building, the old office building and the engine garage. The site is completely fenced around the perimeter of the property. Oily stained soil near the engine garage was detected during a site visit. Around the southwestern area of the site, there appears to be a black sandy material similar to foundry sand on the ground. At the western edge of the property, a pond of standing water and an odor was noted. Throughout the site visit, no readings were detected on the HNu photoionization detection (Ref. 7, 13).

Soil and Air Targets

Super Auto Salvage Yard employs twenty workers on-site (Ref. 7). The nearest residence is roughly 500 feet east of the facility (Ref. 9). No schools or day care facilities are located within 200 feet of the operation (Ref. 7). The total population within a four-mile radius of the site is 101,612 persons as determined from the 1990 Census Population and Housing and supplemented by a house count of the Four-Mile Radius Map (Ref. 10, 11).

Within ½ mile to one mile west of the Super Auto Salvage Yard, the Geranium robertianum (Herb-robert), a state threatened vascular plant species, grows in the Rum Village Park (Ref. 12).

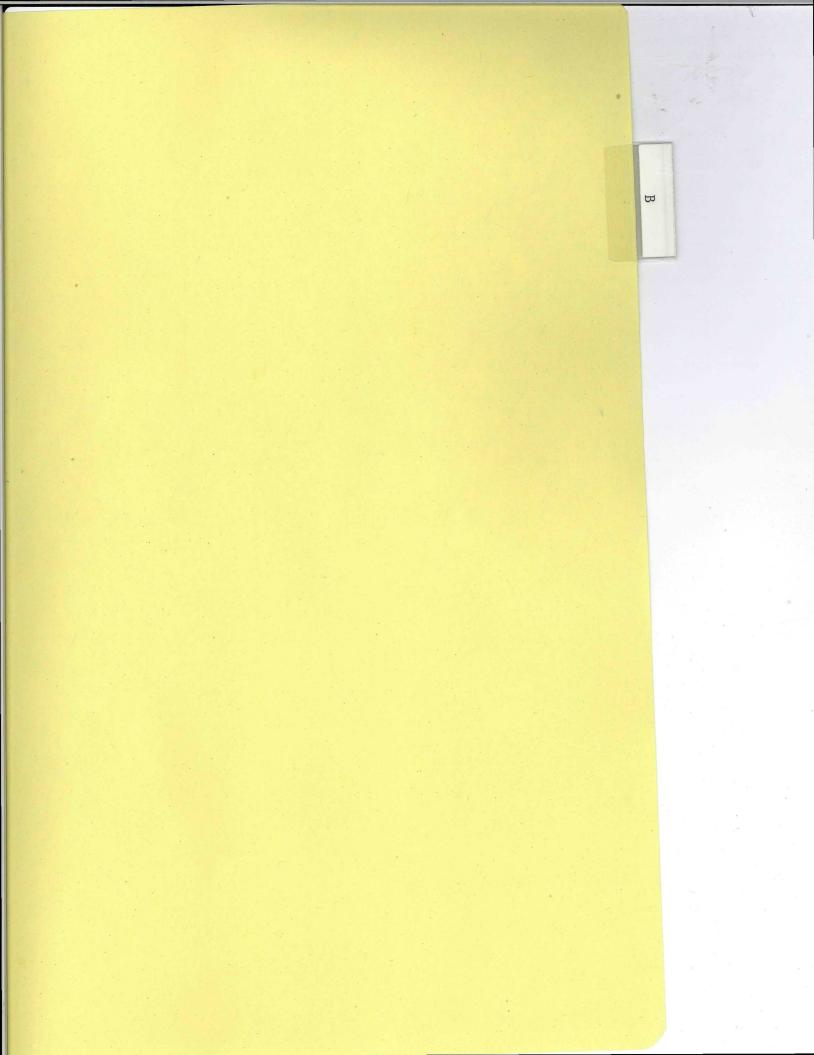
Soil Exposure and Air Pathway Conclusions

The soil exposure pathway appears to pose a potential threat to human health and the environment. The site is fully encompassed by a perimeter fence, but approximately 20 full time workers plus customers of the salvage operation have the ability to come into

contact with potentially contaminated soils. A release to the air pathway has not been documented. During a site reconnaissance an odor was detected but no readings registered on the air monitoring equipment and no blowing dust or soil was indicated.

SUMMARY AND CONCLUSIONS

The Super Auto Salvage Yard has been in operation since the 1930's at 3300 South Main Street, South Bend, St. Joseph County, Indiana. The salvage operation sells new and used automobile parts. During dismantling, in particular the removal of engine parts, a release of waste oils onto the ground occurs. A municipal well field is located on adjacent property to the site and the well fields recapture zone encompasses the site. As a result of this combined with moderate to rapid permeability of on-site soils, a potential exists for the oily wastes to percolate into the groundwater. The runoff from the site enters into the combined sewer system or leaches into the groundwater, therefore there is no 15-mile surface water pathway for the site. There is a potential for soil exposure on-site via workers and customers of the salvage operation coming in contact with the potential wastes during daily business operations. No release to air is suspected due to the nature of potential contaminants and a lack of documentation proving such a release has, in fact, occurred.



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- 2. United States Environmental Protection Agency, <u>Guidance for Performing Preliminary Assessments Under CERCLA</u>, September 1991.
- 3. Super Auto Salvage Yard, South Bend, St. Joseph County, Indiana, 4-Mile Radius Map utilizing U.S. Geological Survey, 7.5 minute topographic quadrangle maps of Indiana: Lakeville, Ind. 1970, photorevised 1980; South Bend East, Ind. 1969, photorevised 1986; South Bend West, Ind. 1969, photorevised 1986; Wyatt, Ind. 1961, photorevised 1980.
- 4. Indiana Department of Environmental Management (IDEM), Office of Environmental Response (OER), Site Investigation Section, "Longitude and Latitude Calculation Worksheet", prepared by Holly Grejda, Re: Super Auto Salvage Yard, South Bend, St. Joseph County, Indiana.
- 5. United States Department of Agriculture, Soil Conservation Service, Soil Survey of St. Joseph County, Indiana, November 1977.
- 6. Federal Emergency Management Agency, National Flood Insurance Program, <u>Firm Flood Insurance Rate Map</u>, City of South Bend, Indiana, Panel 6 of 7, February 17, 1988.
- 7. IDEM, OER, Site Investigation Section, Office Memorandum, prepared by Holly Grejda, November 24, 1993, Re: Super Auto Salvage Yard Site Visit.
- 8. Bill Dillon, Engineer, St. Joseph County Water Department, telephone conversation with Holly Grejda, IDEM, OER, Site Investigation Section, November 15, 1993, Re: Local Water Supply.
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- 10. United States Department of Commerce, Economics and Statistics Administration, Bureau of the Census, 1990 Census of Population and Housing, Summary Population and Housing Characteristics, Indiana.
- 11. IDEM, OER, Site Investigation Section, "4-Mile Radius Population Worksheet", prepared by Holly Grejda, October 4, 1993, Re: Super Auto Salvage Yard, South Bend, St. Joseph County, Indiana.

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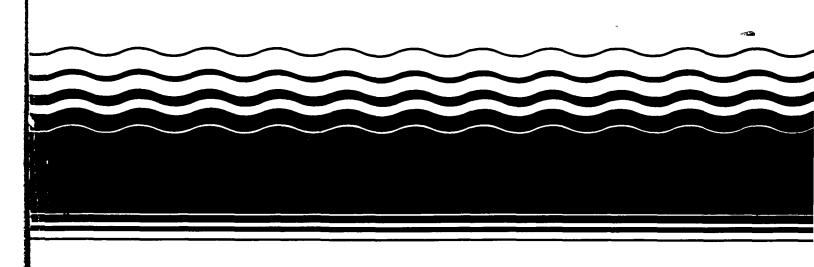
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United States
Environmental Protection
Agency

Office of Emergency and Remedial Response Washington, DC 20460 EPA/540/G-91/013 September 1991



Guidance for Performing Preliminary Assessments Under CERCLA



4-MILE RADIUS MAP

The 4-Mile Radius Map for the Super Auto Salvage Yard, South Bend, St. Joseph County, Indiana utilizes U.S. Geological Survey, 7.5 minute topographic quadrangle maps of Indiana: Lakeville, Inc. 1974, photorevised 1980; South Bend East, Ind. 1969, photorevised 1986; South Bend West, Ind. 1969, photorevised 1986 and; Wyatt, Ind. 1961, photorevised 1980.

The 4-Mile Radius Map for the site is located in Appendix E of the Preliminary Assessment Report.

LONGITUDE AND LATITUDE CALCULATION WORKSHEET

SITE: SUPER AUTO SALVACIE YARD
ADDRESS: 3300 SOUTH MAIN STREET SOUTH BEND, INDIANA ST. JOSEPH COUNTY
EPAID#:
TOPOGRAPHIC MAP USED: SOUTH BEND WEST
LONGITUDE:
$\frac{2.5 \text{ MIN}}{14.45 \text{ CM}} = \frac{\text{X MIN}}{.8 \text{ CM}}$ $\frac{2 = 14.45 \text{X} = D}{14.45} = .1384083$ $\frac{86^{\circ} 15' 00.00''}{0' 8.30''}$
86° 15' 8.30"
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41° 37′ 30.00″ + 1 2.50″ 41° 38′ 32.50″
COMPLETED BY: Hely field DATE:

TOWNSHIP 37NORTH

RANGE 2 EAST

SECTION 24

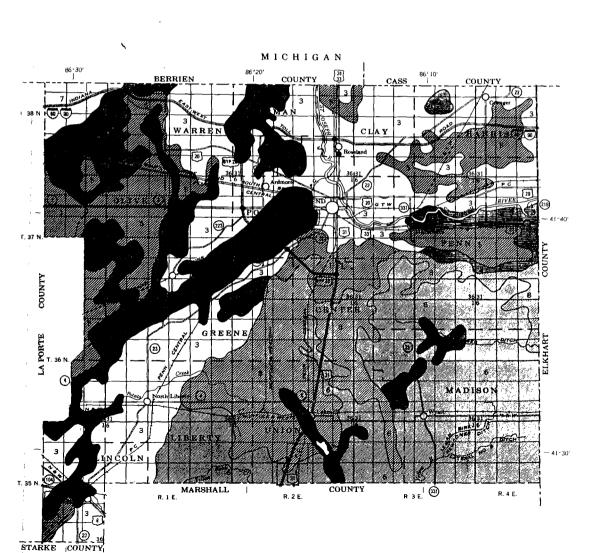
SOIL SURVEY OF

St. Joseph County, Indiana



United States Department of Agriculture Soil Conservation Service

In cooperation with
Purdue University
Agricultural Experiment Station



SOIL ASSOCIATIONS

DOMINANTLY WELL-DRAINED TO EXCESSIVELY DRAINED, NEARLY LEVEL TO STRONGLY SLOPING SOILS

Hillsdale-Oshtemo-Chelsea association: Deep, nearly level to strongly sloping, well-drained and excessively drained, moderately coarse tex-tured and coarse textured soils on till plains, moraines, outwash plains, and terraces

Oshtemo-Fox association: Nearly level to strongly sloping, well-drained, moderately coarse lextured soils that are deep and moderately deep over said and group like send to extract the coarse lextured to the coarse lext sand and gravelly sand; on outwash plains and terraces

Tyner-Oshtemo association: Deep, nearly level to strongly sloping, well-drained, coarse textured and moderately coarse textured soils on outwash plains and terraces

Coupee-Tracy association: Deep nearly level to moderately sloping, well-drained, medium-textured and moderately coarse textured soils on outwash plains and terraces

DOMINANTLY SOMEWHAT POORLY DRAINED TO VERY POORLY DRAINED, NEARLY LEVEL, GENTLY SLOPING, AND DEPRESSIONAL

Rensselaer-Gilford-Maumee association: Deep, depressional and hearly level, very poorly drained, medium-textured, moderately coarse textured, and coarse textured soils on outwash plain.

Crosier-Brookston-Milford association: Deep, depressional and nearly level to gently sloping, somewhat poorly drained to very poorly drained, medium textured to moderately fine textured soils on till plains and lake

DOMINANTLY WELL-DRAINED TO SOMEWHAT POORLY DRAINED, NEARLY LEVEL TO STRONGLY SLOPING SOILS

Moriey-Blount association: Deep, nearly level to strongly sloping, well-drained to somewhat poorly drained, medium-textured to moderately fine textured soils on till plains and moraines

Riddles-Miami-Crosier association: Deep, nearly level to strongly sloping, well-drained and somewhat poorly drained, medium-textured and moderately fine textured soils on till plains

DOMINANTLY VERY POORLY DRAINED, DEPRESSIONAL AND NEARLY LEVEL, ORGANIC SOILS

Houghton-Adrian-Palms association: Deep, depressional and nearly level, very poorly drained, organic soils on lake plains, outwash plains, and

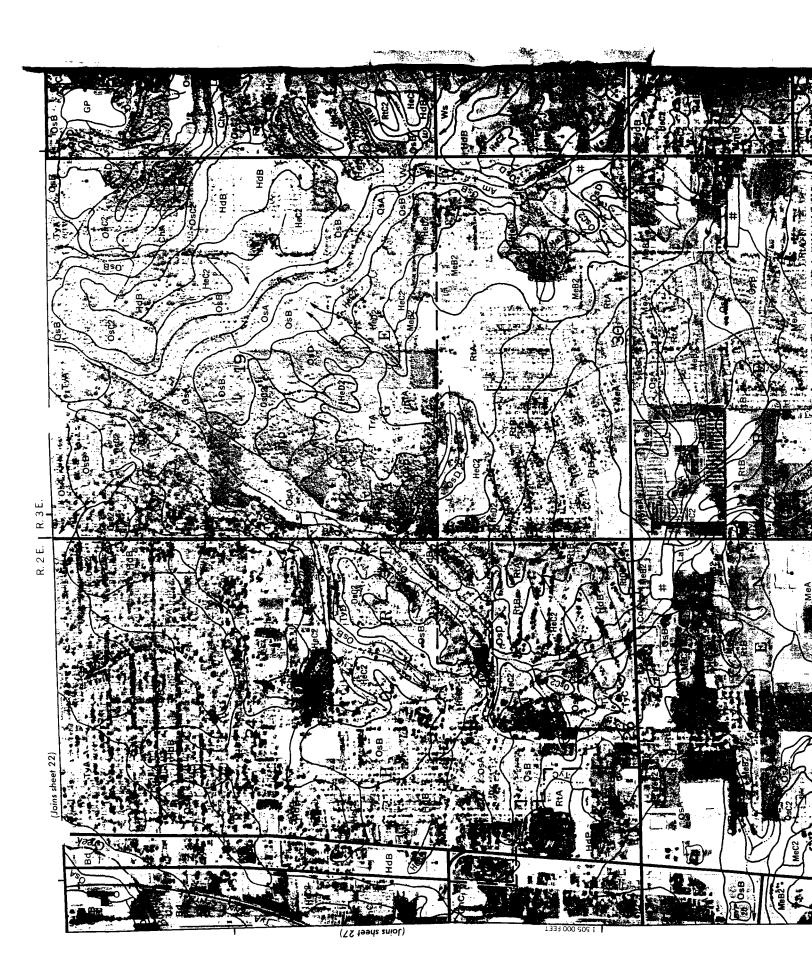
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U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

PURDUE UNIVERSITY AGRICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP ST. JOSEPH COUNTY, INDIANA

SECTIONALIZED TOWNSHIP



The soils have slight or moderate limitations for septic tank absorption fields where slopes are less than 12 percent and severe limitations where slopes are more than 12 percent. Pollution of underground water supplies is a hazard on Oshtemo and Chelsea soils, however, especially near shallow wells. The soils have slight limitations for most other nonfarm uses.

2. Oshtemo-Fox association

Nearly level to strongly sloping, well-drained, moderately coarse textured soils that are deep and moderately deep over sand and gravelly sand; on outwash plains and terraces

This association makes up about 2 percent of the county. About 60 percent of the association is Oshtemo soils, 20 percent is Fox soils, and the remaining 20 percent is minor soils.

Oshtemo soils are deep, nearly level to strongly sloping, and well drained. They are on outwash plains and terraces. The surface and subsurface layers are very dark grayish-brown and dark-brown sandy loam about 16 inches thick. The subsoil is 38 inches thick. It is dark-brown, firm gravelly sandy clay loam in the upper 12 inches and strong-brown, friable loamy sand in the lower 26 inches. The underlying material is light yellowish-brown, stratified sand and gravelly sand that extends to a depth of 60 inches.

Fox soils are moderately deep over sand and gravelly sand, nearly level to moderately sloping, and well drained. They are on outwash terraces. The surface layer is dark-brown sandy loam about 8 inches thick. The subsurface layer is brown gravelly sandy loam 4 inches thick. The subsoil is 26 inches thick. It is dark-brown, firm gravelly sandy clay loam in the upper 8 inches; strong-brown, friable sandy loam in the next 6 inches; and dark-brown, firm gravelly clay loam in the lower 12 inches. The underlying material is yellowish-brown sand and gravelly sand that extends to a depth of 60 inches.

Minor soils in this association are Elston and Dickinson soils on outwash plains and terraces and Landes soils on bottom land.

The soils in this association are used mainly for woodland and pasture. Some areas are used for crops. These soils tend to be droughty in years when rainfall is below normal.

Limitations for septic tank absorption fields are slight where slopes are 0 to 6 percent, moderate where slopes are 6 to 12 percent, and severe where slopes are more than 12 percent. Pollution of underground water supplies is a hazard, however, especially near shallow wells. The soils have slight limitations for most other nonfarm uses.

3. Tyner-Oshtemo association

Deep, nearly level to strongly sloping, well-drained, coarse textured and moderately coarse textured soils on outwash plains and terraces

The association makes up about 31 percent of the county. About 45 percent of the association is Tyner soils, 40 percent is Oshtemo soils, and the remaining 15 percent is minor soils (fig. 2).

Tyner soils are deep, nearly level to strongly sloping,

and well drained. They are on outwash plains and terraces. The surface layer is very dark brown loamy sand about 9 inches thick. The subsoil is 35 inches thick. It is dark-brown, very friable loamy sand in the upper 16 inches and dark yellowish-brown, very friable loamy sand in the lower 19 inches. The underlying material is yellowish-brown and dark-brown sand that extends to a depth of 70 inches.

Oshtemo soils are deep, nearly level to strongly sloping, and well drained. They are on outwash plains and terraces. The surface and subsurface layers are very dark grayish-brown and dark-brown sandy loam about 16 inches thick. The subsoil is 38 inches thick. It is dark-brown, firm gravelly sandy clay loam in the upper 12 inches and strong-brown, friable loamy sand in the lower 26 inches. The underlying material is light yellowish-brown, stratified sand and gravelly sand that extends to a depth of 60 inches.

Minor soils in this association are Chelsea, Brems, Maumee, Brady, and Tedrow soils on outwash plains and Fox and Tracy soils on outwash plains and terraces.

About 15 percent of this association is in crops. The rest is in pasture, woodland, housing subdivisions, and industrial developments. The woodland is on the steeper soils and along the St. Joseph River.

Droughtiness and soil blowing are the main limitations of the soils for farming. Using crop residue, winter cover crops, and green-manure crops helps reduce soil blowing and conserve soil moisture.

The soils have slight or moderate limitations for septic tank absorption fields where slopes are less than 12 percent and severe limitations where slopes are more than 12 percent. Pollution of underground water supplies is a hazard, however, especially near shallow wells. The soils have slight limitations for most other nonfarm uses.

4. Coupee-Tracy association

Deep, nearly level to moderately sloping, well-drained, medium-textured and moderately coarse textured soils on outwash plains and terraces

The association makes up about 7 percent of the county. About 60 percent of the association is Coupee soils, 35 percent is Tracy soils, and the remaining 5 percent is minor soils.

Coupee soils are deep, nearly level, and well drained. They are on outwash plains. The surface layer is black silt loam about 14 inches thick. The subsoil is 38 inches thick. It is brown, friable heavy silt loam in the upper 7 inches; brown, firm light clay loam in the next 5 inches; dark yellowish-brown, firm light clay loam in the next 7 inches; and dark-brown loamy sand and sand in the lower 19 inches. The underlying material is stratified fine sand, sand, and very shaly coarse sand that extends to a depth of 72 inches.

Tracy soils are deep, nearly level to moderately sloping, and well drained. They are on outwash plains and terraces. The surface layer is dark grayish-brown sandy loam about 9 inches thick. The subsoil is 33 inches thick. It is brown, firm loam in the upper 7 inches; dark-brown, firm loam in the next 6 inches; dark-brown, friable sandy loam in the next 5 inches; of 2 to 4 feet. Seasonal wetness is the major concern in management.

This soil is suited to corn and soybeans and to grasses and legumes for forage. The soil has limitations for most nonfarm uses. Capability unit IVs-1; woodland group 3s17.

Brookston Series

The Brookston series consists of deep, very poorly drained soils on till plains. These soils are mainly in depressions on broad flats. They formed in glacial till. The native vegetation was water-tolerant hardwoods and grass.

In a representative profile, the surface layer is very dark gray silty clay loam about 15 inches thick. The subsoil is 31 inches thick. It is mottled, dark-gray, firm clay loam in the upper 8 inches; mottled, gray, firm clay loam in the next 13 inches; and mottled, yellowishbrown, firm clay loam in the lower 10 inches. The underlying material is mottled, brown loam that extends to a depth of 72 inches.

Brookston soils have moderate permeability and a high available water capacity. The organic-matter content is high in the surface layer. Runoff is very slow

Representative profile of Brookston silty clay loam, in a cultivated field 1,620 feet east and 50 feet north of the SW corner of sec. 6, T. 36 N., R. 4 E.

Ap-0 to 9 inches, very dark gray (10YR 3/1) silty clay

loam; weak, medium, granular structure; friable; slightly acid; abrupt, smooth boundary.

A12—9 to 15 inches, very dark gray (10YR 3/1) silty clay loam; few, fine, distinct, dark yellowish-brown (10YR 4/4) mottles and few, fine, faint, dark-gray (10YR 4/1) mottles; moderate, medium, subangular blocky structure forms displayed also beautiful and the subangular than the structure forms displayed also beautiful and the subangular blocky structure forms displayed also beautiful and the subangular than the substant and the subangular structure forms of the substant and the substant blocky structure; firm; slightly acid; clear, smooth

boundary.

B21tg—15 to 23 inches, dark-gray (10YR 4/1) clay loam; common, medium, distinct, yellowish-brown (10YR 5/6) mottles and few, fine, faint, grayish-brown (2.5Y 5/2) mottles; moderate, coarse, sub-angular blocky structure; firm; common, discontinuous, faint, thin, very dark gray (10YR 3/1) clay films on faces of peds; neutral; gradual, wavy boundary.

boundary.

B22tg—23 to 36 inches, gray (5Y 5/1) clay loam; common, medium, distinct, light olive-gray (5Y 6/2) common, medium, distinct, light olive-gray (5Y 6/2)
mottles and few, medium, distinct, yellowish-brown
(10YR 5/6) mottles; moderate, medium, subangular
blocky structure; firm; common, discontinuous,
distinct, thin, dark-gray (10YR 4/1) clay films on
faces of peds; neutral; clear, wavy boundary.

B3—36 to 46 inches, yellowish-brown (10YR 5/4) clay
loam; many, medium, prominent, gray (5Y 5/1)
mottles; weak, coarse, subangular blocky structure; firm; few pebbles about 25 millimeters in
size; mildly alkaline; gradual, wavy boundary.

C—46 to 72 inches, brown (10YR 5/3) loam; many, coarse,
prominent, gray (5Y 5/1) mottles; massive;
friable; few pebbles smaller than 25 millimeters;
strongly effervescent; moderately alkaline.

The salum is 30 to 50 inches thick. The An and A12

The solum is 30 to 50 inches thick. The Ap and A12 horizons are black (10YR 2/1), very dark gray (10YR 3/1), or very dark grayish brown (10YR 3/2). The A12 horizon has few to many, faint to prominent mottles that have a hue of 10YR and 5Y.

Brookston soils are associated on the landscape with the somewhat poorly drained Crosier soils, the poorly drained Milford soils, and the very poorly drained Rensselaer soils, and they have wetness characteristics similar to those of the Milford and Rensselaer soils. Brookston soils are grayer

than Crosier soils. They have a B2 horizon of clay loam, but Milford soils have a B2 horizon of silty clay loam. Brookston soils lack the stratified B3 and C horizons of Rensselaer

-Brookston silty clay loam. This soil is in irregularly shaped areas on broad, depressional flats. The areas range from 2 to 1,680 acres but average 80

Included in mapping are areas, less than 2 acres in size, of poorly drained Milford soils, very poorly drained Rensselaer soils, and nearly level, somewhat poorly drained Crosier soils. Also included are soils that have a surface layer of loam or silt loam.

This soil has a seasonal high water table within 1 foot of the surface. Wetness is the major concern in management.

Most areas of this soil are used for farming. Some are used for special crops. If it is adequately drained, the soil is well suited to continuous cultivated crops, but it has severe limitations for most nonfarm uses. Capability unit IIw-1; woodland group 2w11.

Chelsea Series

The Chelsea series consists of deep, excessively drained, nearly level, gently sloping and moderately sloping soils on outwash plains. These soils are mainly on convex side slopes between nearly level to moderately sloping soils. The native vegetation was mixed hard-

In a representative profile, the surface layer is darkbrown fine sand about 6 inches thick. The subsurface layer is light yellowish-brown fine sand 27 inches thick The layer below that extends to a depth of 87 inches. It is light yellowish-brown, loose fine sand with bands of dark-brown friable sandy loam, 1/8 inch to 1 inch wide and 1 to 4 inches apart.

Chelsea soils have rapid permeability and low available water capacity. The organic-matter content is moderate in the surface layer. Runoff is slow to medium.

Representative profile of Chelsea fine sand, 5 to 10 percent slopes, in a sparsely wooded area, 1,140 feet east and 640 feet north of the SW corner of sec. 9 T. 38 N., R. 3 E.

Ap-0 to 6 inches, dark-brown (10YR 4/3) fine sand; weak medium, granular structure; friable; strongly acid

medium, granular structure; friable; strongly acid abrupt, smooth boundary.

A2—6 to 33 inches, light yellowish-brown (10YR 6/4) fine sand; single grained; loose; medium acid; clear wavy boundary.

A&B2—33 to 87 inches, light yellowish-brown (10YR 6/4) fine sand (A part); many yellow (10YR 7/6) sand grains; single grained; loose; bands of dark brown (7.5YR 4/4) sandy loam (B part), 1 to inches apart and 1/8 to 1 inch thick, decreasing in thickness with deuth: weak, medium, subangula: thickness with depth; weak, medium, subangula blocky structure; friable; strongly acid.

The solum is 4 to 7 feet thick. The Ap horizon is very dark gray (10YR 3/1), very dark grayish brown (10YR 3/2) or dark brown (10YR 4/3). In some profiles there is an Ahorizon, which is very dark gray (10YR 3/1) or dark grayish brown (10YR 4/2). In most profiles there is an Aborizon which is well-dark gray (10YR 3/1). horizon, which is medium acid or strongly acid.

The A part of the A&B2 horizon is light yellowish brown (10YR 6/4) or yellowish brown (10YR 5/4). The B band are brown (10YR 4/3), dark yellowish-brown (10YR 4/4) or dark-brown (7.5YR 4/4) loamy sand or sandy loam. In

some profiles the B bands are 1/4 inch to 2 inches thick, but the total thickness is not more than 6 inches within 60 inches.

Chelsea soils are associated on the landscape with the well-drained Tyner and Oshtemo soils. Chelsea soils are coarser textured than Tyner and Oshtemo soils.

ChA—Chelsea fine sand, 0 to 5 percent slopes. This soil is in irregularly shaped areas on broad flats. The areas range from 2 to 20 acres but average 10 acres. This soil has a profile similar to the one described as representative of the series, but its surface layer is thicker.

Included in mapping are small areas of nearly level

and gently sloping Tyner loamy sand.

Droughtiness and soil blowing are the major concerns in management. Wind blows the dry sand particles, which damages crops.

This soil is poorly suited to row crops, grasses, and legumes. It has slight limitations for most nonfarm uses. Capability unit IIIs-1; woodland group 3s17.

ChC—Chelsea fine sand, 5 to 10 percent slopes. This soil is on broad side slopes at a higher elevation than surrounding soils. It is in irregularly shaped areas on outwash plains. The areas range from 2 to 240 acres but average 30 acres. This soil has the profile described as representative of the series.

Included in mapping are small areas of moderately sloping and strongly sloping Tyner loamy sand and gently sloping to moderately sloping Oshtemo sandy loam. Also included are soils that are fine sand throughout and small areas where wind has removed soil material and formed circular depressions called

Droughtiness and soil blowing are the major concerns in management. Wind blows the dry sand par-

ticles, which damages crops.

This soil is poorly suited to row crops, grasses, and legumes. It has moderate limitations, because of slope, for most nonfarm uses. Capability unit IIIe-12; woodland group 3s17.

Coupee Series

The Coupee series consists of deep, well-drained, nearly level soils on outwash plains. These soils are mainly on broad flats. They formed in loamy outwash and the underlying sandy outwash. The native vegeta-

tion was tall prairie grasses.

In a representative profile, the surface layer is black silt loam about 14 inches thick. The subsoil is 38 inches thick. It is brown, friable heavy silt loam in the upper 7 inches; brown, firm light clay loam in the next 5 inches; dark yellowish-brown, firm light clay loam in the next 7 inches; and dark-brown loamy sand and sand in the lower 19 inches. The underlying material is pale-brown, stratified fine sand, sand, and very shaly coarse sand that extends to a depth of 72 inches.

Coupee soils have moderate permeability and a moderate available water capacity. The organic-matter content is high in the surface layer. Runoff is slow.

Representative profile of Coupee silt loam, 0 to 2 percent slopes, in a cultivated field, 300 feet west and 120 feet south of the center of NE1/4 sec. 30, T. 38 N., R. 1 E.

Ap-0 to 10 inches, black (10YR 2/1) silt loam; moderate. fine, granular structure; friable; neutral; abrupt, smooth boundary.

A12-10 to 14 inches, black (10YR 2/1) silt loam; moderate, medium, granular structure; friable; medium acid;

clear, wavy boundary.

B1-14 to 21 inches, brown (10YR 5/3) heavy silt loam; moderate, medium and fine, subangular blocky structure; friable; very dark grayish-brown (10YR 3/2) organic coatings on faces of most peds; many, very fine, random, inped, continuous pores; discontinuous very dark brown (10YR 2/2) linings in pores and old root channels; strongly acid; clear, wavy boundary.

B21t-21 to 26 inches, brown (10YR 4/3) light clay loam; moderate, medium, subangular blocky structure; firm; thin. discontinuous, dark-brown (10YR 3/3) clay films on faces of peds; common, very fine, random, inped, continuous pores; discontinuous very dark grayish-brown (10YR 3/2) linings in pores and old root zones; few fine pebbles 1/2 inch and less in diameter; medium acid; clear, wavy

boundary.

B22t-26 to 33 inches, dark yellowish-brown (10YR 4/4) light clay loam; moderate, coarse and medium, subangular blocky structure; firm; few, fine, random, inped, continuous pores; discontinuous dark-brown (10YR 3/3) linings in pores; thin, discontinuous, brown (10YR 4/3) clay films on faces of peds; few fine pebbles about 1/2 inch in diameter; medium acid; clear, wavy boundary.

IIB3—33 to 52 inches, dark-brown (7.5YR) 4/4) stratified loamy sand and medium to coarse sand; weak, coarse, subangular blocky structure and single grained; very friable and loose; thin, discontinuous, very dark grayish-brown (10YR 3/2) clay films as bridging and as coatings on some sand grains; 10 to 15 percent pebbles 1/2 to 1 inch in diameter; common shale fragments; strongly acid; clear, wavy boundary.

IIC—52 to 72 inches, stratified pale-brown (10YR 6/3) fine sand, sand, and very shaly coarse sand; single grained; loose; 5 percent fine gravel in the fine sand and sand; 50 percent fine shale in the shaly coarse sand; strongly acid.

The solum is 40 to 60 inches thick. Depth to the IIB3 horizon ranges from 30 to 40 inches. The A horizon is black (10YR 2/1), very dark gray (10YR 3/1), or very dark grayish brown (10YR 3/2). The B2t horizon is clay loam or heavy sandy clay loam. It is medium acid or strongly gold. The C horizon ranges from strongly acid to neutral acid. The C horizon ranges from strongly acid to neutral.

Coupee soils are associated on the landscape with the well-drained Tracy and Troxel soils. Coupee soils have a thicker, darker A horizon than Tracy soils. They have a thinner A horizon than Troxel soils.

CoA—Coupee silt loam, 0 to 2 percent slopes. This soil is in irregularly shaped areas on broad flats. The areas range from 20 to 2,100 acres but average 640 acres.

Included in mapping are areas, less than 2 acres in size, of nearly level, well-drained Tracy and Troxel soils. The Tracy soils have a lighter colored surface layer, and the Troxel soils are in slight depressions.

Droughtiness is the major concern in management. The soil is suited to most crops commonly grown in the county and has slight limitations for most nonfarm uses. Capability unit IIs-2; woodland group o23.

Crosier Series

The Crosier series consists of deep, somewhat poorly drained, nearly level to gently sloping soils on uplands. These soils are mainly on broad till plains adjacent to low depressions and along drainageways. They formed

Hillsdale Series

The Hillsdale series consists of deep, well-drained, nearly level to strongly sloping soils on till plains and moraines. These soils are mainly between soils that formed in glacial till and those that formed in outwash. They formed in sandy loam glacial till. The native vegetation was mixed hardwoods.

In a representative profile, the surface layer is dark grayish-brown sandy loam about 8 inches thick. The subsurface layer is brown sandy loam 4 inches thick. The subsoil is 51 inches thick. It is dark-brown, firm sandy clay loam in the upper 12 inches; dark-brown, firm heavy sandy loam in the next 9 inches; yellowishbrown, friable sandy loam in the next 6 inches; yellowish-brown, friable light sandy loam in the next 13 inches; and friable loamy sand in the lower 11 inches. The underlying material is yellowish-brown sandy loam that extends to a depth of 72 inches.

Hillsdale soils have moderate permeability and a moderate available water capacity. The organic-matter content is moderate in the surface layer. Runoff is slow to rapid.

Representative profile of Hillsdale sandy loam, 2 to 6 percent slopes, in a cultivated field, 345 feet south and 1,340 feet west of the NE corner of SW1/4 sec. 10, T. 36 N., R. 2 E.

Ap-0 to 8 inches, dark grayish-brown (10YR 4/2) sandy loam; weak, fine, granular structure; friable; medium acid; abrupt, smooth boundary.

A2—8 to 12 inches, brown (10YR 5/3) sandy loam; moder-

ate, fine, subangular blocky structure; friable; medium acid; clear, smooth boundary.

B21t—12 to 24 inches, dark-brown (7.5YR 4/4) sandy clay

loam; moderate, medium, subangular blocky structure; firm; thin clay films on all faces of peds; few pebbles ½ to 1 inch in diameter throughout horizon;

slightly acid; gradual, smooth boundary. B22t—24 to 33 inches, dark-brown (7.5YR 4/4) heavy sandy loam; moderate, medium, subangular blocky structure; firm; common thin clay films; slightly acid;

gradual, smooth boundary.

B23t—33 to 39 inches, yellowish-brown (10YR 5/4) sandy loam; weak, medium, subangular blocky structure; friable; clay bridgings on sand grains; few pebbles 1 to 3 inches in diameter; slightly acid; gradual,

wavy boundary.

B31—39 to 52 inches, yellowish-brown (10YR 5/4) light sandy loam; weak, fine, subangular blocky structure; friable; medium acid; gradual, wavy boundary.

B32-52 to 63 inches, yellowish-brown (10YR 5/4) stratified loamy sand and silt loam; massive; friable; slightly

acid; gradual, wavy boundary.

C-63 to 72 inches, yellowish-brown (10YR 5/4) sandy loam; massive; very friable; neutral.

The solum is 42 to 72 inches thick. The Ap horizon is dark grayish brown (10YR 4/2), grayish brown (10YR 5/2), or brown (10YR 5/3). The Bt horizon is sandy clay loam or sandy loam. The C horizon is sandy loam or stratified sandy loam and loamy sand that has some pockets of sand. It is neutral or mildly alkaline.

Hillsdale soils are associated on the landscape with the well-drained Riddles and Oshtemo soils. Hillsdale soils have a coarser textured B horizon than Riddles soils. Unlike Oshtemo soils, they are not underlain by stratified sand and

gravelly sand.

HdA—Hillsdale sandy loam, 0 to 2 percent slopes. This soil is in irregularly shaped areas on broad flats. The areas range from 2 to 40 acres but average 10 acres. This soil has a profile similar to the one described

as representative of the series, but its surface layer i thicker in some places.

Included in mapping are areas of some soils that have a surface layer of loam. Also included are small areas of nearly level, well-drained Oshtemo and Riddle

Droughtiness is the major concern in management Most areas of this soil are used for cash-grain farm ing. The soil is suited to most crops commonly grown is the county and has slight limitations for most non farm uses. Capability unit IIs-5; woodland group 1r2

HdB—Hillsdale sandy loam, 2 to 6 percent slopes This soil is in irregularly shaped areas on knolls and gently rolling side slopes. The areas range from 2 t 100 acres but average 20 acres. This soil has the pro file described as representative of the series.

Included in mapping are small areas of gently slop ing, well-drained Riddles soils and well-drained

Oshtemo soils.

Droughtiness and erosion are the major concerns in management.

Most areas of this soil are cultivated. The soil is suited to most crops commonly grown in the county and has slight limitations for most nonfarm uses Capability unit IIe-11; woodland group 1r2.

HeC2—Hillsdale complex, 6 to 12 percent slopes eroded. The complex is in elongated areas on shor side slopes and knolls. The areas range from 2 to 60 acres but average 10 acres.

Hillsdale soil makes up about 60 percent of the com plex. It has a profile similar to the one described a representative of the series, but its surface layer i thinner and some of the dark-brown sandy clay loan subsoil is mixed with it. Other soils in the complex are Oshtemo sandy loam, Riddles loam, Miami loam, and Miami clay loam.

Included in mapping are moderately steep and moderately sloping soils, severely eroded soils, and soils that are not eroded.

Droughtiness and erosion are the major concerns in management.

Most areas are in permanent pasture, but the com plex is suited to most crops commonly grown in th county where erosion is adequately controlled. Becaus of slope, it has moderate limitations for most nonfarm uses. Capability unit IIIe-15; woodland group 1r2.

HeD2—Hillsdale complex, 12 to 18 percent slopes eroded. This complex is on short knolls and elongate side slopes. The areas range from 2 to 40 acres bu average 10 acres.

Hillsdale soil makes up about 50 percent of th complex. It has a profile similar to the one describe as representative of the series, but its surface layer i thinner and some of the dark-brown sandy clay loar subsoil is mixed with it. Other soils in the complex ar Oshtemo sandy loam, Riddles loam, Miami loam, an Miami clay loam.

Included in mapping are moderately steep an moderately sloping soils, severely eroded soils, an soils that are not eroded.

Erosion is the major concern in management.

Most areas of this complex are in permanent pastur

ture; friable; few very fine roots; 5 percent shale fragments; medium acid; clear, wavy boundary.

IIB3b—80 to 91 inches, grayish-brown (10YR 5/2) loam; common, medium, distinct, yellowish-brown (10YR 5/6) mottles; massive; firm; many very dark brown (10YR 2/2) stains in old root channels; 5 percent shale fragments; medium acid.

The solum is 48 to more than 90 inches thick. The Ap and A12 horizon are very dark brown (10YR 2/2) or black (10YR 2/1). The IIA1b horizon ranges from black (10YR 2/1) to very dark grayish brown (10YR 3/2). The IIB horizon is loam, clay loam, light clay loam, or sandy loam and is medium acid or strongly acid. The C horizon is loose sand.

Troxel soils formed in the same kind of material and are associated on the landscape with the well-drained Coupee and Tracy soils. Troxel soils have a thicker A horizon than

those soils.

Tx—Troxel silt loam. This soil is in slightly depressed, oval-shaped basins along drainageways. The areas range from 2 to 50 acres but average 4 acres. Slopes are 0 to 2 percent.

Included in mapping are areas, less than 2 acres in size, of nearly level and gently sloping, well-drained Coupee and Tracy soils. Also included are soils that have a surface layer of loam.

This soil is used for corn and soybeans. It is well suited to all crops commonly grown in the county and to grasses and legumes for forage. The soil has slight limitations for most nonfarm uses. Capability unit I-1; woodland group o23.

Tyner Series

The Tyner series consists of deep, well-drained, nearly level to strongly sloping soils on outwash plains and terraces. These soils are mainly on raised flats and ridges. They formed in sandy outwash. The native vegetation was mainly mixed hardwoods.

In a representative profile, the surface layer is dark-brown loamy sand about 9 inches thick. The subsoil is 35 inches thick. It is dark yellowish-brown, very friable loamy sand in the upper 16 inches and dark-brown, very friable loamy sand in the lower 19 inches. The underlying material extends to a depth of 70 inches. It is yellowish-brown sand in the upper 16 inches and dark-brown sand in the lower 10 inches.

Tyner soils have rapid permeability and a low available water capacity. The organic-matter content is moderate in the surface layer. Runoff is slow or

medium.

Representative profile of Tyner loamy sand, 0 to 6 percent slopes, in a cultivated field, 500 feet east and 120 feet north of SW corner of $SE^{1/4}$ sec. 27, T. 38 N., R. 3 E.

Ap—0 to 9 inches, dark-brown (10YR 3/3) loamy sand, pale brown (10YR 6/3) dry; weak, fine, granular structure; very friable; strongly acid; abrupt, smooth boundary.

B21—9 to 25 inches, dark yellowish-brown (10YR 4/4) loamy sand; weak, fine, subangular blocky structure; very friable; 5 percent rounded pebbles and shale fragments; strongly acid; clear, wavy boundary.

B22—25 to 44 inches, dark-brown (7.5YR 4/4) loamy sand; weak, medium, subangular blocky structure; very friable; 5 percent rounded pebbles and shale fragments; strongly acid; clear, wavy boundary.

C1-44 to 60 inches, yellowish-brown (10YR 5/6) sand;

single grained; loose; many sand-sized shale fragments; strongly acid; clear, wavy boundary. C2—60 to 70 inches, dark-brown (10YR 3/4) sand; single grained; loose; many sand-sized shale fragments; medium acid.

The solum is 36 to 60 inches thick. The Ap or A1 horizon is dark brown (10YR 3/3) or brown (10YR 4/3). It is slightly acid to strongly acid. The B22 horizon is loamy sand or sand. The C1 and C2 horizons are medium acid or

strongly acid.

Tyner soils are associated on the landscape with the excessively drained Chelsea soils, the well-drained Oshtemo soils, and the moderately well-drained Brems soils. Tyner soils have a finer textured solum than Chelsea soils, and they lack bands. They have a coarser textured solum than Oshtemo soils. Unlike Brems soils, Tyner soils are not mottled.

TyA—Tyner loamy sand, 0 to 6 percent slopes. This soil is in irregularly shaped areas on broad flats. The areas range from 2 to 3,600 acres but average 120 acres. This soil has the profile described as representative of the series.

Included in mapping are areas, less than 2 acres in size, of nearly level, well-drained Oshtemo soils and nearly level, moderately well drained Brems soils.

Droughtiness is the major concern in management. Soil blowing is a hazard when the soil is dry if it has

no protective cover.

Most areas of this soil are used for urban development. Some are used for cash-grain farming, but the soil is not well suited to this use. The soil has slight limitations for most nonfarm uses. Capability unit IIIs-1; woodland group 3s17.

TyC—Tyner loamy sand, 6 to 12 percent slopes. This soil is in elongated areas that range from 2 to 70 acres but average 10 acres. Slopes are short. This soil has a profile similar to the one described as representative of the series, but because of erosion, its surface layer is thinner and is mixed with some dark yellowish-brown material from the subsoil.

Included in mapping are areas, less than 2 acres in size, of moderately sloping, well-drained Oshtemo soils and soils that have slopes of less than 6 percent.

Droughtiness and slope are the major concerns in management. Soil blowing is a hazard when the soil is dry if it has no protective cover.

Most areas of this soil are used for urban development, but a few are used for cash-grain farming. The soil has moderate limitations for most nonfarm uses. Capability unit IVe-12; woodland group 3s17.

TyD—Tyner loamy sand, 12 to 18 percent slopes. This soil is in elongated areas on low ridges on outwash flats. The areas range from 2 to 80 acres but average 8 acres. Slopes are short. This soil has a profile similar to the one described as representative of the series, but its surface layer is thinner, and it is shallower to the underlying material. Some dark yellowish-brown material from the subsoil is mixed with the surface layer.

Included in mapping are areas, less than 2 acres in size, of strongly sloping, well-drained Oshtemo soils and soils that have slopes of more than 18 percent.

Droughtiness and slope are the major concerns in management.

Most areas of this soil are in woodland along the St. Joseph River. Because of slope, the soil has severe

form acid solutions that dissolved the lime (calcium carbonate) from the profile and removed the dissolved products by leaching. Hydrogen ions also replaced some of the basic cations held by clay particles in the soil, causing the horizons to become more acid. In the Riddles soil, carbonates have been removed to a depth of 62 inches. Above that depth horizons are quite acid, and below that depth free carbonates are present as shown in the laboratory data by the high pH value (7.9).

The acid soil solution also caused weathering of primary soil minerals to form clay minerals, and the downward movement of the solutions removed clay particles from the A horizon and deposited them in the B2 horizon. Clay movement resulted in a higher percentage of clay in the B2 horizon (28 to 32 percent) than in the A horizon (12 percent). Clay films were deposited on the surfaces of peds in the B horizon when the solutions carrying the clay evaporated, moved into the interior of the peds, or were used by plants. In the classification system, this B horizon is called an argillic horizon, and the soil is in the Alfisol order.

Water moves readily through the Riddles soil. This soil is well aerated and well oxidized, as indicated by the solid dark yellowish-brown color in the upper part of the B2 horizon, which is a result of the coatings of oxidized iron compounds on the soil particles. Organic

matter, mainly from tree leaves, accumulated on the surface of the Riddles soil but was incorporated in the upper horizons when the soil was plowed.

These same processes have been operating in the other soils of the county, but at different rates. The genesis of the Hillsdale soil was similar, but it formed in a sandier parent material that may have been influenced more by glacial meltwater.

Climate 6

The climate of St. Joseph County is modified considerably by Lake Michigan, which is about 30 miles to the northwest. The lake increases cloudiness, snow, and rain and reduces temperature extremes in both summer and winter. Table 13 gives temperature and precipitation data from records kept at South Bend, and table 14 gives probabilities of the last freezing temperatures in spring and the first in fall.

The temperatures at the National Weather Service Office at the South Bend Airport range from 22° below zero, recorded on January 20, 1943, to 109° F, recorded on July 24, 1934. The temperature reaches 90° F or higher on an average of 10 days per year. The temperature is zero or less on an average of 8 days per year. These averages are considerably less than for those areas that are at the same latitude but that are farther west and are not influenced by Lake Michigan.

Precipitation is rather uniform throughout the year; it averages a little less than 2 inches in February and about 3.5 inches in spring and summer. During the average year, 141 days have 0.01 inch or more of pre-

cipitation. December and January average 15 such days, but the number declines to 9 per month in the late summer and fall.

Thunderstorms occur on about 43 days a year, most commonly in midsummer. Occasionally they cause high winds and brief heavy rains, and the most severe may cause one or two tornadoes. In a 53-year period, 19 tornadoes have been observed in the county. On April 11, 1965, more than four tornadoes tore through the county and killed a number of people.

From observations over a 9-year period, the lowest average relative humidity, 53 percent, occurs in May at 1 p.m. The highest average, 89 percent, occurs in September at 7 a.m. The relative humidity fluctuates inversely with air temperature on most days.

Heavy fog is reported on an average of 24 days a year. Fog is most prevalent in winter when 2 or 3 days a month have heavy fog. The least fog occurs in summer.

St. Joseph County is near the center of maximum snowfall in Indiana. The average annual snowfall is 66 inches. The maximum occurring in 24 hours is 15.6 inches, which was reported January 26, 1967.

Because this county is near Lake Michigan, there is more cloudiness here than farther south. About 188 days of the year are cloudy, 105 days are partly cloudy, and 72 days are clear.

Winds at 21 feet above the ground average 8 miles per hour in August and 12.4 miles per hour in March, the windiest month of the year. The prevailing wind direction is south-southwest in summer and fall and north-northwest in March and April.

As shown in table 14, the average growing season is 166 days long. The length of the growing season increases toward Lake Michigan by 10 to 20 days.

Additional Facts About the County 1

The Potowatomi Indians and some Miami Indians were the original inhabitants of St. Joseph County. The first European explorers were Marquette in 1673 and LaSalle in 1679. Pierre Navarre was the first European settler; he established a trading post in South Bend in 1820.

The county was established by the Indiana Legislature in 1830. Mishawaka was incorporated as a town in 1834, and South Bend was incorporated in 1835.

The settlers followed Indian trails in establishing their transportation system. The most important trails were the Portage Trail, from the St. Joseph River to the Kankakee River; the Great Sauk Trail, from Chicago to Detroit; and the Dragoon Trail, from Chicago to Fort Wayne. The Michigan Road, which linked South Bend with Madison, Indiana, was built through the county in 1832.

The first industries in the county were established in the 1830's. The Studebaker Wagon Works was established in 1852, and other large manufacturing firms after that.

⁶ By LAWRENCE A. SCHAAL, climatologist for Indiana, National Weather Service, U.S. Department of Commerce, and Purdue University, Agronomy Department.

By JAMES R. GETTINGER, district conservationist, Soil Conservation Service.

In 1830, the population of St. Joseph County was about 300. It had increased to 28,162 by 1870 and to 245,045 by 1970.

Farming in St. Joseph County is following the national trend to larger farms and fewer operators. The number of farms decreased from 1,442 in 1964 to 1.364 in 1969. The total land used for farm purposes decreased from 197,715 acres in 1964 to 194,835 acres in 1969.

Cash-grain farming is the most important type, but high-value specialty crops are also important. Mint, potatoes, and onions are produced in the county, generally on the muck soils.

St. Joseph County is a key center in the Great Lakes industrial belt. The industry is extremely diversified. More than 36,000 people are employed in more than 350 manufacturing firms, and 55,000 people are employed in nonmanufacturing industries. The county is also a center of trade for north-central Indiana and southwestern Michigan. It has more than 3,300 retail and 500 wholesale establishments.

St. Joseph County is within a highly developed transportation network. The area is served by 68 motor carriers and six railroad systems, as well as the Chicago, South Shore, and South Bend Electric Railway, which runs directly to Chicago. Bus service is provided by six buslines. The St. Joseph County Airport provides major airline service to principal cities of the United States. Major roadways include U.S. Highways 6, 20, 31, and 33; Indiana Highways 2, 4, 23, 123, and 331; the Northern Indiana Toll Road; and Interstate Highways 80 and 90.

Drainage

The drainage divide between the Mississippi Basin and the Great Lakes Basin crosses St. Joseph County. About two-thirds of the county drains into the Kankakee River system, which flows to the Mississippi River, and one third drains into the St. Joseph River system, which flows into Lake Michigan. The principal tributaries of the Kankakee River, which begins in the county, are the Yellow River, Grapevine Ditch, Niespodziany Ditch, Pine Creek, and Yellow Bank Creek. The principal tributaries of the St. Joseph River are Baugo Creek, Juday Creek, Eutzler Ditch, Woodward Ditch, and Bowman Creek.

Water Supply

In St. Joseph County, the water supply for farms, homes, and industry generally comes from wells. In 1962, the Indiana Department of Conservation reported that "adequate quantities of ground water are available for domestic, stock, public, and industrial supplies from sand and gravel of Pleistocene Age." The report also pointed out that the rocks of Devonian and Mississippian Age are a potential source of ground water (3).

Direct precipitation and surface water storage is a potential source of irrigation water for high-value specialty crops.

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in 1961]

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1960. Soil classification, a comprehensive system, 7th approximation. Soil survey staff. Soil Conservation Service, 265 pp., illus. [Supplement issued March 1967 and September 1968]

Glossary

Aeration, soil. The exchange of air in the soil with air from the atmosphere. The air in a well-aerated soil is similar to that in the atmosphere; but that in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as crumbs, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Soil material, such as sand, silt, or clay, that has

been deposited on land by streams.

Available water capacity (also termed available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil.

Calcareous soil. A soil containing enough calcium carbonate (often with magnesium carbonate) to effervesce (fizz) visibly when treated with cold, dilute hydrochloric acid.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

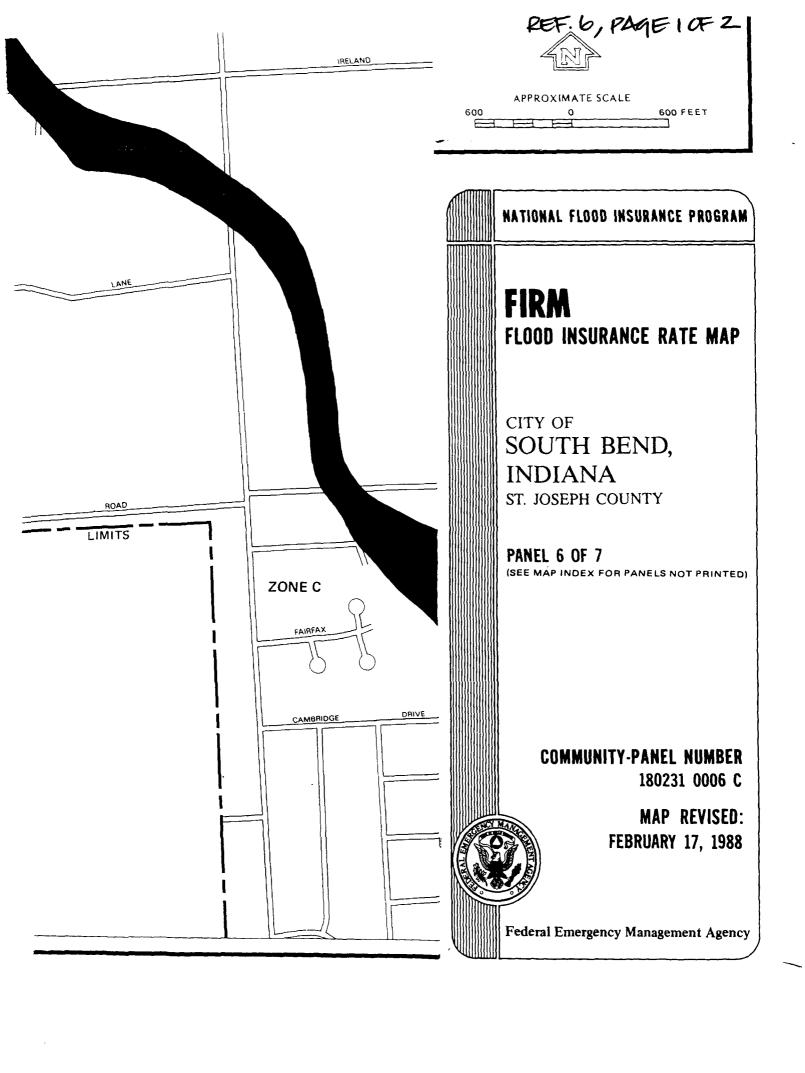
Clay film. A thin coating of clay on the surface of a soil aggregate. Synonyms: clay coat, clay skin.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrations of compounds, or of soil grains cemented together. The composition of some concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are examples of material commonly found in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly

used to describe consistence are

Loose.-Noncoherent when dry or moist; does not hold together in a mass.





State Form 4336

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

INDIANAPOLIS

OFFICE MEMORANDUM

Date: November 24, 1993

To:

3A File

Thru:

Super Auto Salvage Yard

From:

Holly Grejda

Site Investigation Section

Subject: Super Auto Salvage Yard Site Visit

INTRODUCTION

On October 13, 1993, John Naddy of the Site Investigation Section and myself visited the Super Auto Salvage Yard site at 3300 South Main Street in South Bend, St. Joseph County, Indiana. The purpose of the visit was to evaluate CERCLA eligibility and the status of the site with regard to the risk it poses to human health and the environment in the South Bend area. Mr. Paul Schultz represented Super Auto Salvage Yard during the site visit.

The Super Auto Salvage Yard sells automobile parts for a variety of vehicles. Approximately % of the company's business is from distributing new automobile parts. The other % of the company's business is obtained from dismantling used vehicles and selling the parts. The facility has been operating since the late 1930's to the early 1940's and is still active today.

INSPECTION FINDINGS

Super Auto Salvage Yard employs 20 people. The site is approximately fourteen acres and there are two buildings on-site - the main building and the old office building. The site is completely fenced around the perimeter. The city storm sewer is located on the southeastern edge of the property. Most of the drainage from the property flows west to the railroad tracks. Some drainage flows onto property owned by the City of South Bend. The site is bordered to the north by Centennial Steel; to the south by Sherwood Street; to the east by Main Street and; to the west by the Conrail railroad tracks.

There is no 15-Mile Surface Water Pathway for the Super Auto Salvage Yard site. Water either drains west to the railroad tracks, filters into the ground or flows into the city's combined sewer system.

There are approximately 1400 cars at the site. Super Auto Salvage Yard annually processes about 400 cars. The automobiles on-site are kept for roughly three years. When "new" cars are obtained, they are set aside until a contractor comes to reclaim the freon from the cars. Dismantling of the cars is done on the southern edge of the property. Waste oils are drummed and then eventually burned in the engine garage. There was oily stained soil near the engine garage.

At the western edge of the property, there was a pond of standing water and an odor was detected. Throughout the site visit, no readings were noted on the HNu photoionization detector. Around the southwestern area of the site, there appears to be a black sandy material similar to foundry sand on the ground.

Mr. Harold Silberman owns the property at 3300 South Main Street, South Bend, Indiana. Mr. Silberman leases the property to Mr. Paul Schultz who currently runs the salvage operation. The City of South Bend leases the southwestern part of the property. The City tows abandoned cars and stores them on the leased property. Mr. Paul Schultz stated that Salvage Yard has only salvaged used motor vehicles throughout its history.

CONCLUSIONS

As a result of this visit, I recommend that the Site Investigation Section of the IDEM pursue further action on the site under the CERCLA authority.

REF8, PAGE 10F3

County: ST. JOSEPH

TELEPHONE CALL REPORT

Date 11 / 15 / 93	*
From: Pali, Dill mal	Time 8:30 2m.
ST. 10 FPH CO MANY	To: HOLLT GREIDS
ST. JOSEPH CO. WATER DEPT. 219/235-9448	SITE INVESTIGATION SECTION, IDEM
Subject Discussed:	7, 7, -
Subject Discussed: SOUTH PEND LOCAL	-WATER, SUPPLY
15,000 TO HAS II WELL	-FIELDS THAT SERVICE APPROXIMATELT
11 STORE PEOPLE.	- DE AF PROXIMATELY

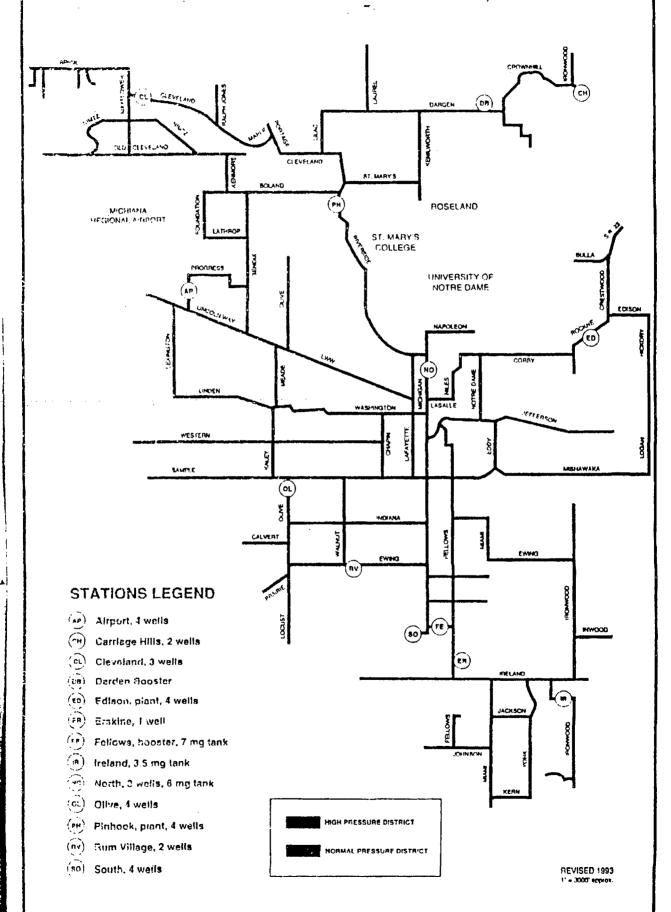
Action Required - HE WILL BEFAXING & COPY OF THEIR SYSTEM

Details

- CITY OF SOUTH BEND SUPPLIES 115,000 FEOPLE GROUNDWATER FROM THE FOLLOWING:
- [1] AIRPORT STATION 4 NEUS, ALL ACTIVE/ LOCATED AT LINCOLN WAY WEST & MICHIANA ROAD (NEAR AIRPORT BOULEVARD)
- [2] CARRIAGE HILLS 4 WELLS, ALL ACTIVE/ JUSTEAST OF GARDEN & IRON WOOD.
- [3] CLEVELAND- 4 WELLS, ALL ACTIVE/ 1000 ST. EAST OF CLEVELAND & MAY FLOWER
- [4] EDISON 4 WELLS, ALL ACTIVE / ROCKNET & CHIMES
- C5] ERSKING ZWELLS, ONE OPERATING, ONE CLOSED DUE TO PLE CONTAMINATION LOCATED AT FELLOWS AND IZELAND (1000AT. NOIZTH).
- [4] OLIVE STREET GUELLS, TWO OPERATING, TWO WELLS CLOSED DUE TO THE CONTAMINATION, TWO CLOSED DUE TO HIGH HARDNESS, THE TWO OPERATION WELLS AZE 168ft. \$ 164ft. PEER/OLNER SAMPLE (SW CORNER)
- [7] RIEZ COMMONS ZWELLS, NONE OPERATING, WELLS ABANDONED BECAUGE THEY MEDE NOT NEEDED! LAUREL & DUTEN.
- [8] SOUTH STATION 4 WELLS, ALL ACTIVE, WELLS AIRE 92ft, 106ft, 9aft. \$ 102 DEEP. / CHIPPEWA & MAIN.
- [9] NORTH STATION 3 WELLS, ALL ACTIVE/830 N. MICHIGAN (SOUTH OF PLUE)
- [10] PINHOOK-4WELLS, ALL ACTIVE/ PIVERSIDE & BOWLAND.
- [11] RUMVILLAGE 2 WELLS, ONE OPERATING, ONE WELL CLOSED WETO THE CONTAMINATION MEUS ARE 1264+ & 137ft. DEEP, WILNUTE EWING.
- BLENDED SYSTEM NO WELLFIGLD PRODUCES MORE THAN 20% OF TOTAL WATER
- WATER FROM EDISON & PINHOOK WEELFIELDS AREALTERED FOR IRONG MANGANI - WATER RETRIEVED FROM THE ST. JOSEPH AQUIFER.

SOUTH BEND WATER SYSTEM

(10" AND LARGER MAINS ONLY)



SOUTH MEND WELLS

Lesignau on	1 Tare	Tepth (15)	l Din, in.)	: Caracity (grd)	! Year !	Motor HP	[_Aux, Power	Pump Speed
Airport #1	[grave]		; 36	2,500,000	1950 ;	100	none	constant
Airport #2	lginvel		; 19	2,200,000	1961	100	none	constant
Ateport #3	1gcave)		18	1,500,000	1961	100	none	constant
Airpret #4	. grayel	_	1 20	1 2,900,000	1979 (125	; none	constant
	,		1	1	;		:	
Car. Hills	∤1 !tubuloc	112	(10	[600,000	1960	30	t none :	constant
Car. Hillie	\$2 tubular	111	10	650,000	1960 ;	30	none !	constant
Car. Hills	#? 'gravel	237	10	1,600,000	; 1982 ;	100	none	constant
Car. Hills	#4 (gravel)	236	; 16	2,800,000	1989 ;	200	; none ;	variable
	:	:	!	;	: :		1	
Cleveland &	i (gravel	222	16	2,800,000	1984 ;	150	: none ;	constant
Cleveland #	2 (gravel	; 167	16	2,660,000	1991	150	; none ;	constant
Cleveland #	3 : NOT	8911.T	;	;	; ;		;	
Cleveland #	4 geavet	; 153	16	2,800,000	1984	150	; none ;	constant
	:	;	•	!	: :		;	
Ediaon #1	gravel	206	: 26	4,000,000	1931	150	none	constant
Filinon 12	[gravel	200	; 26	1 3,100,000	1946	150	none	constant
Edison #3	'gravel	204	26	3,400,000	1954 ;	150	; none	constant
Edison #4	[BUBVET	; 196	. 36	; 3,600,000	1954	150	none	constant
	•	•	1	:	; ;		;	
Erakine #1	(grave)		1 16	800,000	1955 ;		none ;	constant constant
Erskine #2	•	durant HP	16	2,900,000	1993	200	; none	20119(2110
Erskine #3	; Suit	HE EET	,	•	; ;		;	
	1	1	1		1			
North #5	gravel		26 .	3,000,000	1957		(none	constant
North 16	grnvel		26	3,000,000	1958		; none	constant
North #7	gravef		26	3,000,000	1960	60	none	constant
North #8	; 801	BUILT	1	; •	i ;		i i	
	i			1 2 222	i i		i i	
Oliver #1	gravel		; 26	3,000,000	; 1947 ;		none	constant
Cliver #2	gravel		26	3,250,000	1949 (none :	constant
01iver #3	(Arave)		; 26	3,500,000	; 1953 ;		; none ;	constant
Olivar #4	(grave)	192	26	3,000,000	1958 ;		(none (constant
011ver #5 011ver #6	(gravel		1 26	3,000,000	1966 ;		none ;	constant
Oliver 70	gravel	. 197	1 29	3,000,000	1966 ;	150	(none (constant
Pinisok #1	gravel	131	26	3,700,000	1961	200		constant
Pinbook #2	gravel		26	; 3,500,000	1961		none ;	constant
Pinhook #3	gravel		26	3,700,000	1961		; none ;	constant
Pinhook #4	gravel	_	26	3,700,000	1961 ;		none	constant
•	1	:	!	!	1 122.		1 10110	Combanie
Riv. Com. /	1 [gravel	147	10	720,000	1977 ;	40	gasoline eng	variable
Riv. Com.			10	1,400,000	1977		none ;	constant
	1	1	· · · · · · · · · · · · · · · · · · ·		1 1		! !	
Rum VIII. /	1 (grave)	} 137	1 16	1,500,000	1955		none	constant
Rum Vill. #			. 15	2,000,000	1982 ;		none	constant
	:	!	:	1	1			
South #1	!grave1	; 93	18	3,100,000	; 1964 ;	200	none	constant
South #2	(gravei	92	18	2,200,000	1964	150	none	constant
South #3	(gravn1	; 100	(18	; 2,300,000	; 1949 ;	150	none	constant
South #4	(gravel	108	18	3,800,000	1942 ;	200	none	constant

AERIAL BLUE LINE MAP

The Aerial Blue Line Map for the Super Auto Salvage Yard was photographed in the Spring of 1986 by Clyde E. Williams and Associates, Inc.

The Aerial Blue Line Map is located in Appendix E of the Preliminary Assessment Report.

203-034-07315-3 716.00

U.S. Department of Commerce Economics and Statistics Administration BUREAU OF THE CENSUS

CENSUS'90



Y00001011134P5

1990 CPH-1-16

1990 Census of Population and Housing Summary Population and Housing Characteristics

Indiana

Indiana State Data Center Indiana State Library 140 N. Senate Avenue Indpls., In 46204

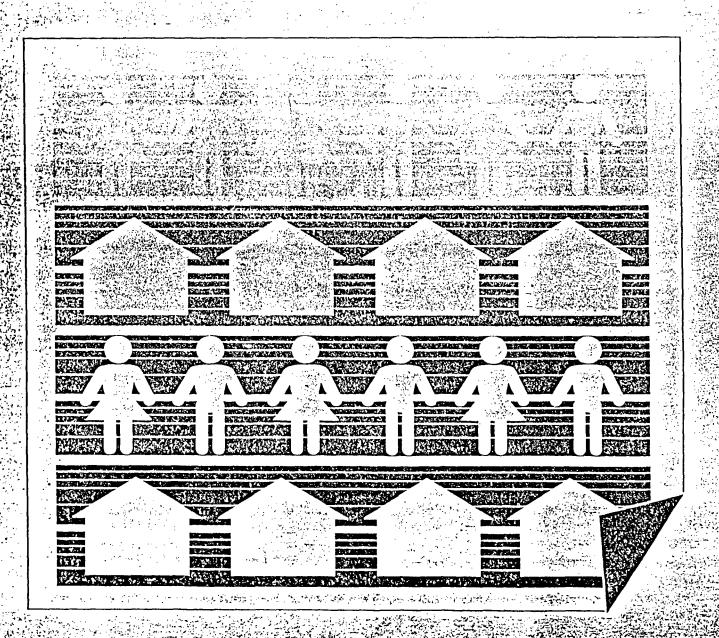


Table 5. .Household, Family, and Group Quarters Characteristics: 1990—Con.

[for definitions of terms and meanings of symbols, see text]

		l		households			Nonfamily h			Persons pe	<u>'-</u>	Persons	in
State County							Househ	older living alon	ie				4
County Subdivision					female house-	İ	1	65 years and	over				Institu-
Place	Persons in households	All house- holds	Total	Married- 1 couple family	husband present	Total	Total	Total	female	Household	Family	Total	tionalized persons
Ripley County—Con.											2.07		
Franklin township	2 993 975	1 051 376	817 255	678 204	95 36	234 121	218 118	137 79	108 70	2.85 2.59	3.27	60 60	60 60
Jackson township	956 238	339 95	263 61	223 46	30 12	76 34	72 31	51 25	35 19	2.82 2.51	3.29 3.28	_	-
Johnson township	3 166	1 232	882	732	118	350	318	172	147	2.57	3.10	24	12
Versailes town	1 779 4 273	752 1 624	482 1 144	377 986	110	270 480	254 442	139 222	121 179	2.37 2.63	3.04	12 168	12 168
Botesvule city (pt.)	3 116	1 256	827	691 317	100	429 91	396 80	198 42	161 28	2.48 2.94	3.17	168	168
Otter Creek township	1 334	454 164	363 123	100	14	41	36	18	12	2.75	3.20	:-	
Shelby Township	836 1 989	281 673	229 558	195 493	24 39	52 115	106	19 59	14 53	2.98 2.96	3.35	17	17
Milan town (p1.)	494	175	138	119	15	37	35	26	24	2.82	3.29	-	-
Rush County	17 638 1 342	6 504 434	4 985 354	4 265 319	532 27	1 519	1 373	791 42	640 31	2.71 3.09	3.16 3.50	491 _	478
Anderson township	807	282	227	213	10	55	52	34	29	2.86	3.27	218	218
Jackson township	381 658	139 236	117	106 178	14	22 41	21 35	9 23	7 16	2.74	3.05 (_	-
Orange township	811	279	219	193	23	60	58	36	25	2.91	3.40	-	-
Pasey township Richland township		409 134	352 107	309 98	27 6	57 27	48 25	31 17	25 15	2.92	3.15 3.41	_	-
Ripley township	1 910	697 335	554 244	504 216	34 } 23 }	143 91	128 83	72 49	60 42	2.74	3.14 3.21	-	-
Rushralle township	7 723	3 047	2 174	1 730	340	873	795	448	370	2.53	3.05	273	260
Rushinile cityUnion township		2 114 319	1 492	1 146 234	261 20	622 59	557 48	310 27	255 22	2.53 2.88	3.05 3.20	194	194
Glenwood town (pt.) Walker township	175	66 338	49 268	45 242	15	17 70	15 64	10 39	8 31	2 65	3.18 3.30	-	-
Marhedian Iowarpib		190	158	139	ı́ã Į	32	28	ĩá	9	2.79	3.08	-	-
St. Joseph County		92 365 4 958	63 629 3 857	50 364 3 444	10 570 330	28 736 1 101	24 427 971	10 571 549	8 463 476	2.54 2.62	3.10 3.02	12 161 20	3 079
Guivare Park COP	. 2 788	1 071	861	756	81	210	182	92	73	2.60	2.93	_	-
South Bend city (pt.)		2 663 11 603	2 000 7 950	1 782 6 870	184 (819)	663 3 653	592 2 948	380 781	341 609	2.58	3.03 3.03	20 2 167	665
Georgetown CDP	3 993	1 845	1 035	879	113	810	675	108	89	2.16	2.90	_	_
Granger (DP (pt.)		2 821 49	2 538	2 377 35	126	283	252	78	56 3	3.06	3.26 3.17	135	135
Mishawaka city (pt.)	2 522	1 522	539	388	111	983	831	124	97	1.66	2.51	132	132
Roseland town		317 906	203 564	172 449	24 91	114 342	96	39 52	28 41		2.74 2.99	34	34
Germon township	. 7 098	2 970 1 467	1 936 773	1 620 603	238 138	1 034 694	842 559	240 128	175 102		2.98 2.83	124 124	124 124
South Bend city (pt.)	. 3 037	1 059	868	789	55	191	166	76	55	2.87	3.21	-	-
Granger (DP (p1.)		3 420 3 414	3 138 3 135	2 953 2 951	134 133	282 279	233	86 68	50 50		3.53 3.53	54	54
Mishawaka city (pt.)	_ 12	6	3	2	1	3	2	-	-	2.00	2.67	54	54
North Liberty town		1 116 539		708 287	114 86	251 152	139	133 81	93 65		3.12 3.06	_	_
Lincoln township	2 660	1 024	751	595 406	122 111	273 221	248 201	130	101	2.60	3.11 3.08	122	122 122
Walkerton town	- 1 798	764 630	533	488	30	97	87	53	35	2.85	3.15	-	-
Olive township		1 277 530		795 318	101 61	350 142	314	198 58	155		3.14 3.09	231	220 65
Penn township	- 59 296	23 859 16 473	16 094	12 919 8 005	2 490 1 998	7 765 5 974		2 799 2 245	2 299 1 870		3.07 3.02	583 569	221 221
Osceola town	1 999	709	561	468	86	148	120	61	48	3 2.82	3.19	30,	-
South Bend city (pt.)	- 1 730 - 92 942			244 16 998	60 5 938	794 13 154	11 207	180 5 302	147 4 237		2.47 3.10	8 849	1 673
South Bend city (pt.) Union township	- 89 541	36 108 1 208		16 185 850	5 812 79	12 846 245	10 936	5 151	4 117	7 2.48	3.10	1 947	1 536
Laterille town	_ 655	271	181	132	45	90	85	36	32	2 2.42	3.14 3.06	11	_
Warren township	1		1	1 335	120	340	1	1	91	}	3.04	-	-
Scott County	_ 1 117			4 806 268	848 26	1 712		739	58°		3.14 3.05		246
Jennings township	- 6 713 - 4 310			1 490 883	310 250	463			15: 11-		3.22 3.22	\ -	-
Johnson township	2 181	75	618	533	57	141	123	46	3	6 2.87	3.20	-	-
Lexington township	2 761 7 967			662 1 833	87 368	188 837			5) 32:		3.20 3.04		
Scottsburg city	5 130			1 114	297	668			28		2.96		204
Addison township	39 805			9 454 3 752	1 215 714	3 592 2 213			1 20 77		3.13		359
Shelbyville city (pl.)	14 969	6 13	3 4 076	3 163	665	2 057	1 795	874	74		3.02 3.01		224 224
Brandywine township	1 1 348			519 323	63 42	141			5		3.21 3.26		_
Shelbyville city (pt.) Honover township	! -		- -	542	-	-		.		- -	~	-	-
Morristown town	\ 943	35	9 258	219	32	186	95	54		8 2.63	3.17 3.19		
Hendricks township	1 219			298 288		85			2		3.34 3.19		-
Liberty Township	. 1 797	63	2 499	436	45	133	118	72	5	1 284	3.17		
Marion township Shelbyville city (pt.)	1 384	48	3 404	367	23	79	. 66	29	2	3 2.87	3.17	1 :	- -
Moral Township	. 4 567			1 169						8 3.01	3.24		
Noble township	456			369 108						0 2.83 6 2.94	3.12 3.26		· -
Sysiph tomushib	. 1 974		9 575	526	29	114	1 89	30	2	7 2.87	3.13	17	
Sugar Creek township Union township	859	28	5 239	241 215		46	36			3 2.90 6 3.01	3.22 3.29		
Van Buren township Washington township] 1 555	5 52	5 437	398 334	27	88	3 74	1 31	2	8 2.96	3.29	١ .	
Spencer County	1			4 739		1			59	1	3.19		
	'0 74			4 /39					39 10		3.12 3.23		
Carter township	2 893					1 .							
Carter township Dale town Sonta Clous town (pt.) Clay township	1 45 9:	7 55	7 413	351 24		14	4) 13:	3 67	5	6 2.62 6 2.36	3.10	9	

4-MILE RADIUS POPULATION WORKSHEET

Total population within a 4-mile radius of the Super Auto Salvage Yard site was determined from data obtained from the 1990 Census Population and Housing and supplemented by a house count of the 4-Mile Radius Map for the site.

HOUSE COUNT WITHIN THE 4-MILE RADIUS

# OF HOUSES PERSONS/HOUSE DISTANCE FROM SITE # OF	RESIDENTS
3 2.54* 0-1/4 MILE 7.62	
9 $2.54*$ $1/4 < X < 1/2 MILE 22.86$	6
116 $2.54*$ $1/2 < X < 1 MILE 294.6$	64
871 2.54* 1< X < 2 MILES 2212	.34
1557 2.54* 2< X < 3 MILES 3954	.78
816 2.54* 3< X < 4 MILES 2072	. 64

SHADED AREA WITHIN A 4-MILE RADIUS

% OF SHADED AREA	DISTANCE FROM SITE	# OF RESIDENTS
2%**	0-1/4 MILE	2067.72
4%**	1/4 < X < 1/2 MILE	4135.44
11%**	1/2 < X < 1 MILE	11372.46
23%**	1 < X < 2 MILES	23778.78
26%**	2 < X < 3 MILES	26880.36
24%**	3 < X < 4 MILES	24812.64

TOTAL RESIDENTIAL POPULATION BY DISTANCE RING

DISTANCE FROM SITE	# OF RESIDENTS
0-1/4 MILE	2075.34
1/4< X < 1/2 MILE	4158.3
1/2< X < 1 MILE	11667.1
1< X < 2 MILES	25991.12
2< X < 3 MILES	30835.14
3< X < 4 MILES	26885.28
	_

TOTAL POPULATION WITHIN A 4-MILE RADIUS OF THE SITE: 101612.28

* 2.54 persons per household average for St. Joseph County.

** The shaded area of the map is the city boundary for South Bend/St. Joseph County, Indiana. There are an estimated 103,386 persons that live in South Bend.

POPULATION CALCULATED BY

__date: 4 0000621993



MEMORANDUM

State of Indiana • Department of Natural Resources • Indianapolis

	11	: (0	١ ١	
TO:	H.	1 /	Y	bre	jda	

Site Investigation Section, Office of Environmental Response

Indiana Department of Environmental Management

Room N-1255

Indiana Government Center North

FROM: Cloyce L. Hedge, Coordinator

Indiana Natural Heritage Data Center

Division of Nature Preserves

Indiana Department of Natural Resources

DATE: 11- (2-93

SUBJECT: Endangered Species, Public Land, Sensitive Environments SITE: Super Anto Salvase Yard, South Bend, 54. Juseph G.

I am responding to your request for information on the endangered, threatened, or rare (ETR) species, high quality natural communities and natural areas, and public lands in and around the area indicated in the subject. If a Land and Water Conservation Fund (LWCF) Site or a Natural and Scenic River is involved, you should contact the Division of Outdoor Recreation, (317) 232-4070. The Indiana Natural Heritage Data Center has been checked with the following results:

see attached sheet	LWCF Site
no ETR species, natural areas or public lands documented	Designated or candidate Natural & Scenic River

The information I am providing does not preclude the requirement for further consultation with the U.S. Fish and Wildlife Service as required under Section 7 of the Endangered Species Act of 1973. Contact:

U.S. Fish and Wildlife Service

718 North Walnut Street Bloomington, Indiana 47401 (812) 334-4261

At some point, you may need to contact the Department of Natural Resources' Environmental Review Coordinator so that other divisions within the department have the opportunity to review your proposal. For more information, please contact:

Patrick R. Ralston, Director
Department of Natural Resources
Attn: Stephen H. Jose
Environmental Coordinator
Division of Fish and Wildlife
402 West Washington Street. Rm. W273
Indianapolis, Indiana 46204-2748
(317) 232-4080

The Indiana Natural Heritage Data Center relies on the observations of many individuals for our data. In most cases, the information is not the result of comprehensive field surveys conducted at particular sites. Therefore, our statement that there are no documented significant natural features at a site should not be interpreted to mean that the site does not support special plants or animals.

Due to the dynamic nature and sensitivity of the data, this information should not be used for any other project. It may be necessary for you to request updated information for any project changes.

Thank you for contacting the Indiana Natural Heritage Data Center. You may reach me at (317) 232-4052 if you have any questions or need additional information.

SENSITIVE SPECIES, ETC. Super Auto Salvage yard

Location

Species/Feature *Status

Ambystoma platerium unlisted salamarder

Platarthera lacera *SC plat

Gerarium robertiamum ST "

*Status: SE - State Endangered

ST - State Threatened

SR - State Rare

SSC - State Special Concern

FE - Federal Endangered

FT - Federal Threatened

FC - Federal Candidate

PHOTODOCUMENTATION LOG

The photodocumentation log for the Super Auto Salvage Yard includes photographs from an on-site visit made on October 13, 1993.

The photodocumentation log is located in Appendix D of the Preliminary Assessment Report.

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DIVISION OF WATER

DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA

STATE OFFICE BUILDING

INDIANAPOLIS, INDIANA 46204

Telephone 317-232-4160

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DIVISION OF WATER

DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA
STATE OFFICE BUILDING
INDIANAPOLIS, INDIANA 46204

Telephone 317-232-4160

REF. 14, 20-4

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	Fill in completely - Refer	to instruction sheet		
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WELL INFORMATION				•
Depth of well: 185	· · · · · · · · · · · · · · · · · · ·		17/20/20	
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Diameter of casing or drive pipe:	; <u></u>	Total Length	:	
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PEF. 14, PAGE 30F45

DIVISION OF WATER DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA STATE OFFICE BUILDING INDIANAPOLIS, INDIANA 46204 State Form 35680

Telephone 317-232-4160

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WELL LOCATION	(Fill in complet	ely - Refer to in	struction sheet)		1974 - 1974 1974 - 1974	g garage to a second control of the second c
County in which well was	drilled 57. J	ough	Civil Townsl	nip		
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Building Contract	y of South B	Addre	ss			
Name of Well Drilling Cor	ntractor: Blac A	ustin Du	lling Cor	whine	·	-
Address			0		·	· ·
ne of Drilling Equipme	ent Operator:				:	
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WELL INFORMATION	No.			100 1		•
Depth of well: 83		Date well w	as completed: _	March 2"	1, 1927	
Diameter of casing or driv	e pipe:	· · · · · · · · · · · · · · · · · · ·	Total Length:			
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Type of Well: Drilled	Gravel	Pack 🔲	Driven 🗌	Other	100	5 (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)
Use of Well: For Hor	ne 🗌 F	or Industry 🔲	For	Public Supply [Sto	ck 🔲
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DIVISION OF WATER DIVISION OF WATER
DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA STATE OFFICE BUILDING

INDIANAPOLIS, INDIANA 46204
Telephone 317-232-4160

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WELL LOCATION (Fill in completely - Refer	· · · · · · · · · · · · · · · · · · ·
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Driving directions to the well location: (Include County Ro	oad Names, Numbers, Subdivision Name, lot number, distinctive
Bulletin # 3, Sj 8-9	yette Steel from USGS
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NAME OF WELL OWNER and/or BUILDING CONTRACT	TOR
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Name of Well Drilling Contractor:	
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ne of Drilling Equipment Operator:	
WELL INFORMATION	2)
	well was completed: 9 < 1911
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Type of Well: Drilled Gravel Pack	Driven Other
Use of Well: For Home For Industry	☐ For Public Supply ☐ Stock ☐
Method of Drilling: Cable Tools Rotary	Rev. Rotary Jet Bucket Rig
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Pumping Test: Hours Tested Rate	g.p.m. Drawdown ft. level at end of test)
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DIVISION OF WATER DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA STATE OFFICE BUILDING INDIANAPOLIS, INDIANA 46204 Telephone 317-232-4160

County in which well was drilled St. Total County Road Names, Numbers, Subdivision Name, lot number, distinctive Include County Road Names, Numbers, Subdivision Name, lot number, distinctive Include County Road Names, Numbers, Subdivision Name, lot number, distinctive Include St. St. Subdivision Name, lot number, distinctive Include St. St. Subdivision Name, lot number, distinctive Include St. Subdivision Name, lot number,	WELL LOCATION (Fill in completely - Refer to instruction sheet)
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Method of Drilling: Cable Tools Rotary Rev. Rotary Jet Bucket Rig Static water level in completed well (Distance from ground to water level) Bailer Test: Hours Tested Rate g.p.m. Drawdown ft. (Drawdown is the difference between static level and water level at end of test) Pumping Test: Hours Tested Rate g.p.m. Drawdown ft. level at end of test) Signature 1006	Type of Well: Drilled Gravel Pack Driven Other
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Bailer Test: Hours Tested Rate 8.p.m. Drawdown ft. (Drawdown is the difference between static level and water level at end of test) Pumping Test: Hours Tested Rate 8.p.m. Drawdown ft. level at end of test) Signature 15 Signature 15 Signature 15 Signature 15	Method of Drilling: Cable Tools Rotary Rev. Rotary Jet Bucket Rig
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C # Signature from USGS Bulletin #15	between static level and water Pumping Test: Hours Tested Rate Transform Transform for level at end of test)
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DIVISION OF WATER
DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANAS
STATE OFFICE BUILDING

. INDIANAPOLIS, INDIANA _46204

Telephone 317-232-4160

WELL LOCATION (Fill	in completely - Refer	to instruction sheet)		
County in which well was drilled	St. Jaseph	/ Civil Townshin		
Description of the small beauty	_ Include County Ro.	ad Names, Numbers, Subd	ivision Name, lot numb	er, distinctive
Driving directions to the wen location	landmarks, etc.			
South of Pl	show Factor	1 100 125G	5 Belletin 7	47
(7-24)		- Promo		
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·		_		
NAME OF WELL OWNER 1/ P	THE DESIGN CONTENT A CONTENT			
NAME OF WELL OWNER and/or B				
Well Owner City of	South Bul	Address		
Building Contractor		Address		
Building Contractor	1 12 7	- M		
Name of Well Drilling Contractor: _	Hurtin Dr	elling Onza	y	
Address			′ - 	
The of Deilling Equipment Orange				
me of Drilling Equipment Operato	or:		<u> </u>	
WELL INDODUCED				
WELL INFORMATION			. 0	
Depth of well: 129	Date	well was completed: M	arch 18,192.	Z
Diameter of casing or drive pipe:		Total Length:		
Diameter of liner (if used):		Total Length:		
Diameter of Screen:	Length:	Slo	t Size:	· ·
Type of Well: Drilled	Gravel Pack	Driven	Other	
Use of Well: For Home	For Industry	For Pub	ic Supply	Stock 🔲
Method of Drilling: Cable Tool	and the second s	The state of the s	Bucket Rig	
Static water level in completed well	(Distance from ground	to water level)	· · · · · · · · · · · · · · · · · · ·	feet
Bailer Test: Hours Tested	Rate	g.p.m. Drawdown	ft. (Drawdown	the difference
Dummar	The second secon	Alle of the Boston of Lines	between stati	c level and water.
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WATER WELL LO	G	PARTONIA STATES	76 				
FORMATIONS (Color, type of material, bardness, etc.)	From	To	5	2	<u> </u>	7	0 4
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brown gravel	42	53] .	Date	Date	Mut	
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PEF.14, PAGE TOF45

DIVISION OF WATER DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA STATE OFFICE BUILDING INDIANAPOLIS, INDIANA 46204 Telephone 317-232-4160

THE PROPERTY OF THE PROPERTY O

WELL LOCATION (Fill in completely - Refer to instruction sheet)	- 13 - 14 - 14 - 15 - 15 - 15 - 15 - 15 - 15 - 15
County in which well was drilled St Jaseph Civil Township	
Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number landmarks, etc.	, distinctive
6 · 1 · 1 · 1 · 1 · 1	
Firm USGS Beelletin #3 Sj 7-15 Faving Avenue, west of perfume factory	
	 -
NAME OF WELL OWNER and/or BUILDING CONTRACTOR	
Well Owner City of South Bend Address	
Well Owner City of South Blue Address	
Name of Well Drilling Contractor: Austin Drilling Company	
Name of Well Drilling Contractor: 1744km Unitling Confling	
Address	
Tame of Drilling Equipment Operator:	
WELL INFORMATION	
Depth of well: 205; Date well was completed: 8/24/26	· · · · · · · · · · · · · · · · · · ·
Diameter of casing or drive pipe: Total Length:	,
Diameter of liner (if used): Total Length:	
Diameter of Screen: Length: Slot Size:	
Type of Well: Drilled Gravel Pack Driven Other Other	·
Use of Well: For Home For Industry For Public Supply St	ock 🔲
Method of Drilling: Cable Tools Rotary Rev. Rotary Jet Bucket Rig]
Static water level in completed well (Distance from ground to water level)	feet
Bailer Test: Hours Tested Rate gp.m. Drawdown ft. Drawdown is	the difference
Pumping Test: Hours Tested Rate g.p.m. Drawdown ft. level at end of the	
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Signature Jama 1879 Bulletin	}

WATER WELL LO	G 77 7 7	1100 (1 44 (141) 1 -				
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Coarse gravel	70	80			In (TW
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blue clay	130	195		1 1		FOR ADMINISTRATI (Well driller does
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DIVISION OF WATER

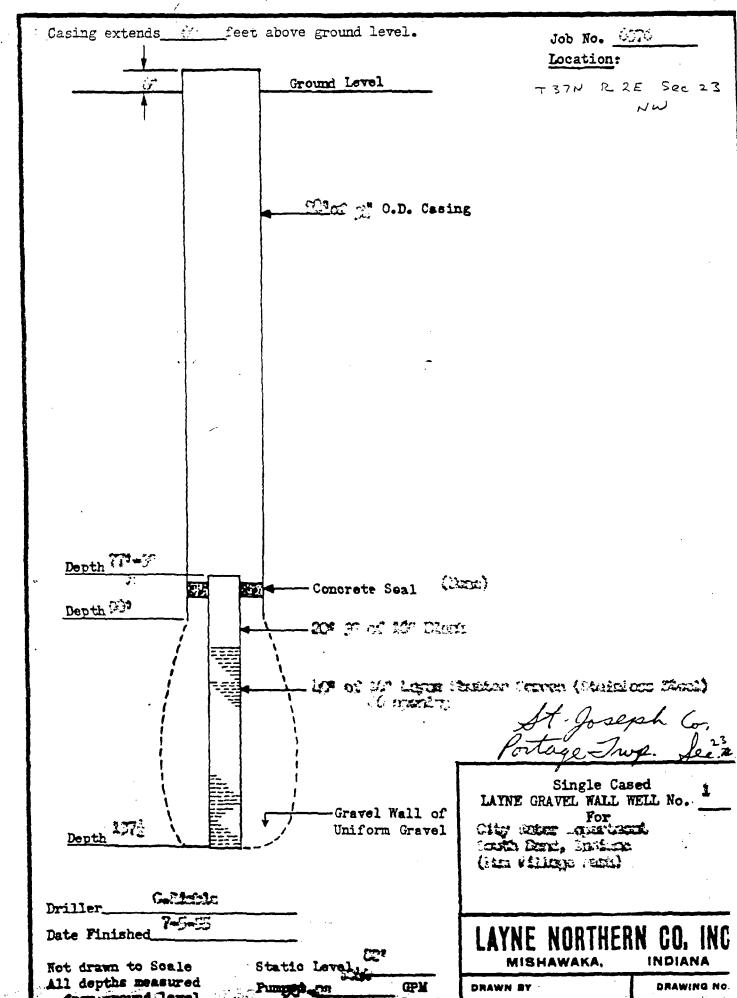
DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA

STATE OFFICE BUILDING INDIANAPOLIS, INDIANA 46204

Telephone 317-232-4160

WELL LOCAT	(1 m m	completely - Refer to	instruction sheet)		
County in which v	vell was drilled 57	- Joreph	Civil Townsh	ip	
	to the well location:	include County Road	Names, Numbers, St	ibdivision Name, lot	number, distinctive
Lien	, USGS	landmarks; etc. Beelletin # Street,	£3	: 7-21	
	Donmoyer	Street,	100 let	east of	
	Michigan	Street			
		LDING CONTRACTO			
Well Owne	er City of Se	with Bend Ad	dress		
Building C	Contractor	Ad	dress		
Name of Well Dril	ling Contractor:	day Dull	ling Comp	ony	
		U	7		
'ame of Drilling I	Equipment Operator:				
WELL INFOR	MATION		•		
Depth of well:	200:-	Date we	ll was completed:	1/17/27	
Diameter of casing	g or drive pipe:			·	
Diameter of liner	(if used):		Total Length:_		
Diameter of Scree	n: I	ength:	<u> </u>	Slot Size:	
Type of Well:	Drilled X	Gravel Pack	Driven 🔲	Other	
Use of Well:	For Home	For Industry	For P	ublic Supply 🔲	Stock 🔲
Method of Drilling	g: Cable Tools	Rotary .	Rev. Rotary 🔲	Jet D Bucket	Rig 🔲
		stance from ground to	water level)		fee
Bailer Test:	Hours Tested	_Rate	p.m. Drawdown_		vdown is the difference
Pumping Test:	Hours Tested	_Rate8	p.m. Drawdown_		een static level and wate at end of test)
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WATER WELL LO	G	1240 area 1126 area 126 area 126 area 127 area	N. N. W.	
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clay	/30	140	on by	End !
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clay with gravel	150	155	Date	Eart
Ar clay	155	180		TW
blue clay	180	195		32
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Pumping Level

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WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	То	Loca	Cour	Field	Topo	COUNTY	
			tion ac	Courthouse Location By	Field Located	Topo Map -	YTY	
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	-		1					TIVE es not
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			Ft S of NL.	Ft E of WL.	Ft N of SL.	Ft W of EL) ALY
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POF 14, PAGE 10

DIVISION OF WATER

DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA

STATE OFFICE BUILDING

INDIANAPOLIS, INDIANA 46204

Telephone

317-232-4160

WWR.S.

1/0 /uz

WATER WELL RECORD

WELL LOCATION (Fill in completely - Refer to	instruction sheet)	
County in which well was drilled	Civil Township	
Driving directions to the well location: Include County Road landmarks, etc.	Names, Numbers, Subdivision Name, lot r	
South Station Well Field -	South Bond Watnworker	
Well #	3	
NAME OF WELL OWNER and/or BUILDING CONTRACTOR	, L	•
Well Owner South Rend Watnworks. Add	dress P.D. BOX 1714 224 No.	Main St.
Building Contractor Add	lress	
Name of Well Drilling Contractor:		
Address	——— Ни	7
e of Drilling Equipment Operator:	Hilton Deep	
WELL INFORMATION	225	
	l was completed:	
Diameter of casing or drive pipe:	Total Length:	
Diameter of liner (if used):	Total Length:	
Diameter of Screen: Length:	Slot Size:	4 14.74.75.
Type of Well: Drilled Gravel Pack Gravel Pack	Driven Other	
Use of Well: For Home For Industry	For Public Supply	Stock 🔲
Method of Drilling: Cable Tools . Rotary . R	the Marian California and a second of the contract of the cont	lig 🔲
Static water level in completed well (Distance from ground to w	Mile Canada Mariella . 1 and 1 Mariella and a graphy water	feet
Bailer Test: Hours Tested Rate 3.1		own is the difference
Pumping Test: Llours Tested Rate	。	static level and water end of test)

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LAYNE-NORTHERN COMPANY VIME 562 \$7

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j	▼ TEST	MISHAWAKA, INDIANA	E B B B O
	☐ PERMANENT		E W A
	WELL LOG No. 634	CITY South Bend	County
-		Leaurtment - South Station	《双英英语发展发展》

Inc State. Location

ft. North of SW Corner of Section. From Land Description_ _ft. East and_

From Street or Road 201 N. of Purp House to 1 - LC1 L. of -- property Line

	FROM NATURAL GROUND				
FORMATION FOUND — DESCRIBE FULLY	Depth to Top of Stratum	Depth to Bottom of Stratum	Thickness of Stratum	Static Water Level	
Erovn Sand and Gravel	<u> </u>	1.5	45		
Errown Sand	45	83	30	32	
Errorn Sano & Oravel	<u> </u>	93	10	<u>)2</u>	
Town Clay with some A (STRAF)	93	97		-	
Crey Clay	97	105	- d		
auTL: No encrustation was noted on the water bearing					
formation.	<u> </u>	<u> </u>	<u> </u>	<u> </u>	
				<u> </u>	
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	+	+	-	-	
inch diameter hole drilled by Cable To	ol [] Rote	ry ☐ Jett	ing		

Date Started Finished DRILLER

WATER WELL LOG FORMATIONS (Color, type of material, hardness, etc.) From To Courthouse Location By Location accepted w/o verification by Field Located Торо Мар Date FOR ADMINISTRA... VE USE ONLY (Well driller does not fill out) Ft S of NL. Ift E of WL. Ft W of EL Ft N of SL. 7: Bedrock elevation Depth to bedrock Ground Elevation Aquifer elevation Lot Number



BEF. 14, PAGE 120F 45

Mail complete record within 30 days to:
INDIANA DEPARTMENT OF NATURAL RESOURCES
Division of Water
2475 Directors Row
Indianapolis, Indiana 46241
Telephone number (317) 232-4160

(FIII in completely)

			CATION			
y where drilled St. Joseph	l l	-				
Driving directions to the well location (inclis space for a map on reverse side.	clude county road na	mes, number, subdivis	ions lot number with considers	tion to intersecting, road	and trip origin	ation there
	nut Street &	<u>+</u> 40' South	of Ewing Avenue i	n Rum Village	Park	
OW-92C						
Name of well owner		OWNER - CO	NTRACTOR		Telephone N	umber
				i	, , ,	
					ZIP code	
224 North Main Stre	eet - South	Bend, IN			46601	
Name of building contractor					Telephone n	umber
Iddener (Street and number city state)					()	
Address (Gilber and Homber, City, State)					Zii Code	
ame of drilling contractor						
	Inc.				<u> </u>	/Z-9050
1	Road, Grande	er. IN)
me of equipment operator	Road, Grange		License number	Date of completion		
1.	tay Drilling	i i	281		2	
+	ION DETAILS			WELL LOG		
OBSERVATION	_	rigation			From (Feet)	To (Feet)
Sublic constr. Const.	Ta		_	with Some	0'	291
St. Joseph Pottage 37/N Giving directions to the well location (include county road names, number, subdivisions for number with consideration to intersect is space for a map on reverse side. + 130° East of Walnut Street \$ ± 40° South of Ewing Avenue in Rum Vi. ON-92C OWNER-CONTRACTOR City of South Bend Address (Sizes and number, city, state) 224 North Main Street — South Bend, IN Name of building contractor Peerless-Midwest, Inc. 100 Sizes and number, city, state) 51255 Bittersweet Road, Granger, IN pro dequipment poperator Beehler Keiser (Tatay Drilling) SUB CONSTRUCTION DETAILS WELLOW CONSTRUCTION DETAILS WELLOW CONSTRUCTION DETAILS WELLOW Poblic supply Stock Other Insective Sand & Gravel Yellow-Brown Clay with Soft Sand & G				-		
1 _ *	where drilled St. Joseph St. Joseph St. Joseph Griections to the well location (include county road names, number to for a map on reverse side. + 130' East of Walnut Street & + 40' St. Street of a map on reverse side. + 130' East of Walnut Street & + 40' St. Street and number, city, state) OWN-92C OWN OWN Of well owner City of South Bend s (Street and number, city, state) 224 North Main Street — South Bend, I Street and number, city, state) of drilling contractor Peerless—Midwest, Inc. s (Street and number, city, state) 51255 Bittersweet Road, Granger, IN of equipment operator Beehler Keiser (Tatay Drilling) SUB CONSTRUCTION DETAILS vell: OBSERVATION Well: OBSERVATION Industry Test Inrigation Diameter of length Material Diameter feet Diength Material Diameter feet Diength Material Diameter of pump Shallow-well jet Other (specify): WELL CAPACITY TEST One Air Test rate Well: Obepth of grout Sealing malerals From To Installation Number of bass Method of Installation Number of bass Method of Installation Number of bass Method of Installation Number of bass Method of Installation Number of bass Method of Installation Number of bass Method of Installation Number of bass Method of Installation Number of bass Method of Installation Number of bass Method of Installation Number of bass Method of Installation Number of bass Method of Installation Submitted herewith is to the best of my Static level Signature of Method and Depth filled Promoted Static level Signature of Method of Installation Number of bass Method of Installation Signature of Method and Depth filled Signature of Method and Depth filled Signature of Method and Depth filled Signature of Method and Depth filled Signature of Method and Depth filled Signature of Method Bethod Depth filled Signature of Method Depth Signature of Method Depth Signature of Method Depth Signature of Method Depth Signature of Method Depth Signature of Method Depth Signature of Method Depth Signature of Method Depth Signature of Method Depth Signature of Method		Hard Boulders		29'	32'
uing length Material	where dulloogh Covering to the well location include county road names, number, subdivisions for number with consideration to Intersecting, road and trip origination there is or a major network include county road names, number, subdivisions for number with consideration to Intersecting, road and trip origination there is or a major network include county road names, number, subdivisions for number with consideration to Intersecting, road and trip origination there is or a major network and trip origination there is or a major network of the subdivisions for number with consideration to Intersecting, road and trip origination there is or a major number. CWI-92C OWNER-CONTRACTOR Tatephone Number City of South Bend 3 (Posse 3 (South Main Street - South Bend, IN 18 (South Main Street -					
The action of the well location include county road names number auditivisions for number with consideration to intersecting, road and try origination there is pack for a mise or neverse able. 130' East of Walnut Street £ ± 40' South of Evring Avenue in Rum Village Park CX4-92C OWNER-CONTRACTOR People and number City of South Pend		49'				
Set_JOSEPh Set_J			67'			
			Coarse Sand & Fin	ne Gravel	67'	691
Tract		, cloudy, odor, etc.)	Clay with Some F	ine Gravel	69'	931
Silaliom-well je		t	MedCoarse Sand	w/Fine Gravel	93'	110'
Dack and			Clay with Fine G	ravel	110'	117'
) I MIE I			Medium Sand & Gr	avel	117'	134'
		nrs.			- - -	
feet	(depth to water)	feet	Clay		134'	140'
GROUTING INFORMATION	WELL ABA	NDONMENT			}	
Depth of grout	Sealing material	Depth filled				
	Method of installa-					
		1	/Additional annua fact			
by swear or affirm, under the penal mormation submitted herewith is	Ities for perjury that to the best of my	Signature of owner of	(Additional space for well of authorized representative	l log on reverse side)	Date 2/13	3/92

	_	/)	_							4 44 1, 10 Stories 8
"Sou Bend - Rum Vck	lago	owit.		* .			(1) 4			
		FOR	ADMINISTRA	IVE USE ONLY		FC	6100-1			
County / Township			Range						Section	
1 Styseus	37	\mathbb{N}	l	<i>⊋E</i>	NE	Y 4	NW %	NM	23	7 64
Topo map	T - 7		Ft. W of EL	Ground elevation	3 4		Subdivision	emen no		
Field located	1			Depth to bedrock			Lot numb	er	 	
By - An Date 06/92			Ft. N of SL	_	···-					46.5
Courthouse location		55U	E. E -4 \A/I	Bedrock elevation			U.T.M.			1
By Date Location accepted w/o verification by	ļ	270	Ft. E of WL	Aquifer elevation		 -				
cocation accepted w/o vermication by	}	40	Ft. S of NL		7					
(continued from front side)	1		<u></u>	(1)	7				 -	
WELL LOG	FROM	ТО	T	······································	SKE	TCH SHO	WING LOCAT	IÓN		
Formations: type of material	Feet	Feet	(Loc	ate with reference	to highway	s, interse	cting county	oads and	distinctive land	marks.)
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0.			42" open nower drilled by reverse circulation method
	4.		reverse circulation method
Dry Sand 6		.0	Neat cement seal 6' to 32'
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Boulders - 321		1	
•			;
0 0		-	16" welded steel casing -
46 1			3/8" wall - 62#/ft.
Clay	//	1,7	.
541			
Sandy Clay	//	./	.√ ≰∤ 28 yards of sand &
With Gravel		1	Bentonite seal 29' to 74'
& Boulders	1 /	1./	
74 74			
Sand & Gravel 78'	22.	1	
77.7.7			
		2.	12 yards Northern No. 2
Clay with Gravel			silica gravel 74' to 126'
94' 96'			
		-	30' of 16" pipe size
Medium to Coarse Sand & Gravel			Johnson stainless steel wire wound screen with
			.060 slot
		200	
126' 126'	ma 0 000	A 0000	क्री
	\$ 0,000 0	0000	Bottom of open hole from
Clay with Boulders	(000 000	000-0	126' to 134' backfilled with gravel
/ # F	TELD ANALY	YSIS:	
			Iron - 0.1 PPM Hardness - 18 GPG
	·		PH - 7.4
City South Bend			StateIndiana
Location 210' South of Ewing & 190'	East of M	orris	Street (Extended)
County St. Joseph Twp. Approximately 650' West of Existing			
Test Capacity GI			Well No2
Specific Capacity46.8	_ GPM/Ft.	_ π. D.D.	RUM VILLAGE PARK
Date Drilled10-27-82			SOUTH BEND, INDIANA
Driller Mike Garrage	 	<u> </u>	
Operation of slwell results in appro		.	PEERLESS-MIDWEST, INC.

		FOR ADMINISTRATI (Well driller does		HAMMANALALALALALALALALALALALALALALALALALA
St. Joseph	37N	Rge. 2E	NW % NW	" NW W BIN "
SOUTH BEND WE	ST 7/2	Ft. W of EL	Ground elevation 8/0	Subdivision name nanananananananananananananananananana
Field located			Depth to bedrock	Lot no.
By Date		Ft. N of SL	r	10-27-82
Courthouse location			Bedrock elevation	
fly Date	25	OO FI. E of WL		i
Location accepted w/o verification by			Aquiler elevation	
BRUNS 1-18-82	122	10 Ft. S of NL	684 -	
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WELL LOG (Continued from front side)						
Formations: type of material	From	To				
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81/t) Local	SKETCH SHOWING LOCATION e with reference to highways, intersecting county roads, and distinctive landmarks.	,	:
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Location Tenvous	REF	14, P/	4E14	TAS
UTME 56/85 LAYNE-NORTHERN COMPANY UTME 56/85\$ MISHAWAKA, INDIANA PERMANENT WELL LOG No. 12 CITY South Base County County				
UTME 56/850 Incorporated MISHAWAKA, INDIANA	a a	W L		E B
☐ TEST	ă	12222222 16 0/	AAAAAA	
	7	Job N	O. 74110	59.7.7.
WELL LOG No. 12 CITY South Base	Co	unty	198650	701
Owner City water repertment	To	wnship	TOT LAGE	3 /1/
(₹-	of famous	
Location (ft) Locate	Sto	rte		
From Land Description SIT it. East and 60° E. of H.H. 100° E. of Chip, ever		rtn of SW :	Corner o	i Section.
TEST PERMANENT ELL LOG No. 1E CITY South Bend Count voier City later repertment From Land Description From Street or Road FORMATION FOUND — DESCRIBE FULLY TOURS TEST MISHAWAKA, INDIANA TOWNS Section Count From Land Description From Street or Road FROM NO FORMATION FOUND — DESCRIBE FULLY Top Soil Course Sand and Gravel Find Size Section That Size Section State 1. North FROM NO		n Stat	<u>ه</u> ~	
	FROM			
TIME SURES LAYNE-NORTHERN COMPANY UTME SURES MISHAWAKA, INDIANA TEST PERMANENT L LOG No. LE CITY South Bend er City Later repertment From Land Description 60° E. of R.H. 100° E. of Chippens From Street or Road FORMATION FOUND — DESCRIBE FULLY Top Soil Coarse Sand and Gravel Fina Since Accine Sand and Gravel Looped in City	Top of	Bottom of	01	Water
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Coorse Sand and Gravel	1	20	19	
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	Incorporated MISHAWAKA INDIANA MISHAWAKA INDIANA IT IE CITY South Bank County Later repertment Description or Road 60° E. of H.H. 100° E. of Chip, eva FORMATION FOUND — DESCRIBE FULLY FORMATION FOUND — DESCRIBE FULLY FORMATION FOUND — DESCRIBE FULLY To a State FROM NATURAL GROUND LEVEL Depth to Top of Stretum Stretum FROM NATURAL GROUND LEVEL Depth to Top of Stretum Stretum O 1 1 32 FROM E CLIPS STREET TO 15 Stretum Top of Stretum FROM NATURAL GROUND LEVEL Depth to Top of Stretum Stretum Top of S			
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刄 _ inch diameter hole drilled by 🔲 Cable Tool 🛅 Rotary 🔲 Jetting

Pipe left in hole

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DRILLER

This Water Well Record form is designed to record the most essential data content water well. We request that you be as accurate as possible in recording this information and development of new water supplies.

An accurate location of the well is equally as important as an accurate well accurate include all information possible in the space provided for well location.

As specified in Chapter 6 of the Acts of 1959, a copy of this report must be ithin thirty days after the completion of a well to the Division of Water Resource Department of Conservation.

BEF. H, PKGE 150-45 UTM NOT EXHCT 609 800 561 750 Ground Level 16' of 38" casing concrete between 38 & 34" casing 34 " O.D. Casing Depth 50' 11" - EsseratexEssa No seal 75 Depth 70 20' of 18" blank casing 10' of 18" bronze screen #6 opening 40018" blank pipe 15' of 18" bronze snutter screen Single Cased #6 opening LAYNE GRAVEL WALL WELL No. -Gravel Wall of For Uniform Gravel Depth 100 SOUTH BEND WATER WORKS #5 Cape May SOUTH BEND, INDIANA Silica gravel SOUTH STATION 12 tons used Driller Ed Koodward LAYNE NORTHERN CO. INC. Date Finished 6-30-49 INDIANA MISHAWAKA, Static Level 10 Not drawn to Scale All depths measured DRAWING No. Pumped 1051 **GPM** DRAWN BY from ground level 1204 Pumping Level APPROVED BY

Country State Two. 37A RGE 2C	FORMATIONS (Color, type of material, hardness, etc.)	From	To	<u>۲</u>	ა <u></u>	· 🚽	C	
TWP. 37AL RGE 2C % % SEC 23 Fi W of EL Ground Elevation Pate Fi S of NL Aquiter elevation Loi Number Fi S of NL Aquiter elevation Loi Number Fi S of NL Aquiter elevation Loi Number				ocation	ield La ourtho	opo M	TNUO	(15) (17)
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TWP 37N RGE 2C W SEC 23 Remain Market Fit W of EL. Ground Elevation Date Fit of WL Bedrock elevation Loi Number Loi Number Loi Number				ificati				.*
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OTE OFFE PARE 160 49 Top of Casing above ground level ___ OuterGround Lavel Ground Level _38_ " O. D. Casing 18 * O. D. Casing ₹: Depth 80* St. Joseph Co. Portage Dwp 25' of 18" Layne Bronze Shutter Screen H. Opening Gravel Wall of Uniform Gravel 44 Double Cased LAYNE GRAVEL WALL WELL For Depth 108'6 CITY OF SOUTH BEND 18" x 30" x 50" SOUTH BEND, INDIANA 111. Depth Sec 19 LOCATED AT SOUTH STATION CHARLES HIERS Driller_ Date Finished 4/16 194_2 AYNE NORTHERN CO. INC. INDIANA MISHAWAKA, Not drawn to Scale Static Level All depths measured 7770 **CPM** DRAWN BY DRAWING No. Pumped from ground level 60 Pumping Level DATE LALTALE

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To	100 T	ို့	27		C		
	~		Location accepted w/o verification by	Courthouse Location By	Field Located	Topo Map	COUNTY		
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DIVISION OF WATER DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA STATE OFFICE BUILDING

INDIANAPOLIS, INDIANA 46204

Telephone 317-232-4160

WATER WELL RECORD

WELL LOCATION (Fill in completely -	Refer to inst			•	**************************************
County in which well was drilled 57. Jares	zh "	Civil Town	ship		
Driving directions to the well location: Include Cou	nty Road Nán				distinctiv
iandmarks, e	inty in which well was drilled ST. Jorgan Civil Township Include County Road Names, Numbers, Subdivision Name, lot number, landmarks, etc. Jorgan OSGS Bulletin #3 S. 7-26	• • • •			
ELL LOCATION (Fill in completely - Refer to instruction sheet) Dounty in which well was drilled					
Chippewa Avenue a	nd Pen	na Pa	il Road	<i>)</i>	
, ,	•				
NAME OF WELL OWNER and/or BUILDING CONT	RACTOR				
Well Owner Court Story	Address				
Ruilding Contractor	٠	_			
Name of Well Drilling Contractor: Hustin	Drilling	y Comp	Crey		
Address		<i>y</i>	0		
ne of Drilling Equipment Operator:		·			
WELL INFORMATION					•
			4/2/1	_	
Depth of well:	Date well wa	s completed:	1/21/7	7	
Diameter of casing or drive pipe:		Total Length:		·-	
Diameter of liner (if used):		Total Length:			
·			/		·
the state of the s				∐ St	ock 🔲
Method of Drilling: Cable Tools Rotary	Rev.	Rotary 🗌	Jet 🔲 1	Bucket Rig 🗌]
Static water level in completed well (Distance from g	round to wate	r level)	1. ZZ~		fcc
Bailer Test: Hours Tested Page		Apple Commence			
			The state of the contract of the state of th		
rumping Jest: Hours Tested Rate	g.p.m.	Drawdown	ft.	level at end of to	est)
		1 20	565 A	10-A #10	
	Signature)			Alkin T.C.	The Contract
	The state of	A111111		and the later than	et at the line

FORMATIONS (Color, type of material, hardness, etc.)	From	To		* ***********************************					
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medium to course sand with gravel	11	16	ion by			Bend	* * * * * * * * * * * * * * * * * * *		
sand and fine gravel	16	22				8	2		
course sand with some gravel	27	25		Date	Date	101	·		
sand and fine gravel	25	29				7	TWP	,	
sand	29	40				7/	37		
coarse sand and gravel with day	40	67				4	1	FQ	
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blue clay =	116	147	N.L.	(WL.	(SL.	(EL	iκ t	E.Y	<u> </u>
clay and sand	147	158	_	100	-	_	E/		
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DIVISION OF WATER

DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIVIDUAL

STATE OFFICE BUILDING
INDIANAPOLIS, INDIANA 46204

Telephone

317-232-4160



WATER WELL RECORD

••	in completely - Refer to in	•	en en en en en en en en en en en en en e
County in which well was drilled Driving directions to the well location	Total Caller David N	Civil Township lames, Numbers, Subdivision	Name, lot number, distinctive
	andiars, etc.		
		:	
NAME OF WELL OWNER and/or B	UILDING CONTRACTOR		
Well Owner City of	South Blue Addr	ess	
Building Contractor	Addr	ess	
Name of Well Drilling Contractor:	U	Consony fue	
Address			
ne of Drilling Equipment Operato	or:		
WELL INFORMATION	•		
Depth of well: _/9 Z	Date well v	was completed: $\frac{2/25}{2}$	155
Diameter of casing or drive pipe:			
Diameter of liner (if used):			
Diameter of Screen:	Length:	_ Slot Size:	
Type of Well: Drilled	Gravel Pack	Driven	Other
Use of Well: For Home	For Industry 🔲	For Public Sup	oply Stock S
Method of Drilling: Cable Tool	s Rotary Re	v. Rotary 🗌 Jet 🔲	Bucket Rig
Statio water level in completed well	Distance from ground to w	ater level)	fee
Bailer Test: Hours Tested	Rateg.p.	m. Drawdownft	(Drawdown is the difference
Pumping Test: Hours Tested	Rate g.p.	m. Drawdownft	between static level and water level at end of test)
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FORMATIONS (Cader, type of material, bertoma, sec.) From To Guarternary Sandy clay Sandy clay Sandy clay Sandy clay Sandy clay Sand and gravel Loudley clay Sand sound and gravel Loudley clay Sound and gravel Loudley clay Sound and gravel Loudley clay Sound and gravel Gravel clay Sound and gravel with clay balls (104 106 Gravel and gravel with clay balls (107 110) Sound and gravel with clay lable (107 110) Sound and gravel with clay balls (107 110) Sound and gravel with clay lable (107 110) Sound and gravel with clay balls (129 129) Sound and gravel with a little clay (123 127) June Gravel and sound with clay lables (129 129) Sound and gravel with a little clay (129 129) Sound and gravel with a little clay (129 129) Sound and gravel with a little clay (130 135) Sound and gravel with a trace of clay (130 135) Sound and gravel with a trace of clay (130 135) Sound and gravel with same gravel (135 146) Sound and gravel with trace of clay (135 146) Sound and proved (136 146) Sound and proved (137 146) Sound and proved (137 146) Sound and proved (137 146) Sound and proved (137 146) Sound and proved (137 146) Sound and proved (137 146) Sound and proved (137 146) Sound and proved (137 146) Sound and proved (137 146) Sound and proved (137 146) Sound (137 146)						्रीतिपूर्वम् स्थापन	,			- [
Our tennary sandy clay sandy clay round and fine gravel frown clay round and gravel from there beared gravel bouldary clay bouldary clay sould and gravel bouldary clay sould and gravel bouldary clay for year gravel with clay bolls for your form of the second fill only round and gravel gravel gravel with clay bolls for your sould and gravel round and gravel with clay bolls for your sould and gravel with clay bolls for your sould and gravel with clay bolls round and gravel with clay bolls for your sould and gravel with clay bolls round and gravel with clay bolls round and gravel with clay bolls round and gravel with clay bolls round and gravel with clay bolls round and gravel with a little clay round and gravel with	WATER WELL LO	G The state of				14.0	· '~'],	,		
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round and fine gravel frown clay round and gravel from clay round and gravel from this of gravel bouldery clay bouldery clay bouldery clay from the clay for the		-		cation	arth.	-	Ď.	S		
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gravel and sand with little clay 106 107 The work of EL Ground Elevation Fix of NI. Sand and gravel with clay balls 110 122 Sand and gravel with a little clay 123 127 fine gravel and sand 129 129 Sand, gravel and boulders with 129 Sand and gravel with a face of day 130 135	soft clay	58	65				4	Ž	7	
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fine gravel with a little clay 123 127 fine gravel and sond 129 129 Sectiock elevation on Security balls Again balls 130 135	sand and gravel	122	123	·	;	•	,	MV		
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April and court with a trace of about 130 135	fine gravel and sond	129	129	fer ele	ock el	h to b	nd El	MV		•
April and court with a trace of about 130 135	sand gravel and boulders with	129		vation	evatio	edrocl	evation	SE(
About out of the Track of Source 130 135 131 1 10 12 1 10 10 10 10 10 10 10 10 10 10 10 10 1	clay balls		130		6	£,	X	2		
April and medium gravil 135 140 hard brown gravil and sand 140 142 frown gravil and sand with trace of clay 142 146 Smooth hard brown clay 146 175 Smooth 1014 brown clay 175 163	soul and gravel with a trace of day	130	135		2/2	. 1 '	Ġ.,	AN A	Q	
hard brown growl and sond 140 142 146 frown growl and soul with trace of clay 142 146 Smooth hard brown clay in 146 175 Smooth 1014 brown clay in 175 16:8 Amouth 1014 brown clay in 180 180	sand and medium gravel	-/35	140		0			F		Α· •
brown growland sand with trace of clay 142 146 Amonth hard brown clay 146 175 Amonth 1014 brown clay 175 166 Amonth 1014 brown clay 175 166	hard brown growel and sand	140	142	5		Pue		5		4
Amonth hard brown clay at 146 175 Amonth 101 brown clay at 168 A	hour growland sand with trace of clay	142	-146	1	6					
Amonth Jolf Brief Co. 175 1685	Smooth hard brown clay	146	775		る。	Si.	2.		遺	F 136
11100 1310	smooth self theum self	175	168							ا د د
	Amonth I was the same of the s	170	130		<i>a m</i> an		P+7 '.			

Alimbyro many bon man white 190=199

PEF. 14, PAGE 10 0 45 UTMN 609625 UTME 561950 LAYNE-NORTHE MISHAWAKA. ☐ TEST **□***PERMANENT WELL LOG No. 28 ____CITY_ City later Department Well #2 Ind in State_ Location ft. North of SW Corner of Section. From Land Description ft. East and From Street or Road 50 E. of R.R. - 600 W. of Chippens Mr. Mar Hillar Pork FROM NATURAL GROUND LEVEL Depth to Top of Strutum Depth to Bottom of Stratum Thickness FORMATION FOUND - DESCRIBE FULLY oi Stratum 30 1 Top Soil 65 الم Course Sand with some gravel 69 65 Course mans Gravel, some same. 6 75 hedlus best 75 17 ŶŻ Course Gravel 92 Stopped in Clay inch diameter hole drilled by 🗌 Cable Tool 🗷 Rotary 🗌 Jetting

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1 -	_ WATER WELL LOG				`
ORMATIONS (C	Color, type of material, hardness, etc.)	From	То	COUNTY: TWP. 37M RGE. 2 E Well driller does not represent the state of the state o	
REMARKS:	3.			RGE. 2 E SW & SE & SE & SEC. 23 Ft W of EL. Ground elevation 772 Ft E of WL. Bedrock elevation 678 Ft S of NL. Aquifer elevation 678 Tield /ncall 69 3 Hebrard.	
t may be of An acculease inclu	INSTRUCTIONS ater Well Record form is designed to record We request that you be as accurate as possible in the planning and designed to record the space and information possible in the space of the Acts of 1959,	rd the mo ossible i velopment important provided	n recording of new was as an according to the contract of the	ing this information as water supplies. W is courate well-region to location and the second and	

thin thirty days after the completion of a well to the Division of Water Resour

partment of Conservation.

WATER WELL RECORD State Form 35680

DIVISION OF WATER INDIANAPOLIS, IN 4624

Mail completed record within 30 days to: DIVISION OF WATER INDIANA DEPARTMENT OF NATURAL RESOURCES 605 STATE OFFICE BUILDING

INDIANAPOLIS, INCIANA 46204 PHONE (317) 2324160

WEI	L	LOCATION
(Fill	in :	completely)

(Fill in con	npletely)
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<u>S. Josep</u>	<u>n</u>
Awaship Lo Borne	_0
and the well location (loc	tude county road names, numbers, sub-
ions, lot number with consideration	to intersecting roads and trip origina-
There is space for a map on reverse	side.
exercity locati	ron:
42) 0	
101 West Chips	seva ave.
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outh Bend, In	ndiana
- (
S/A you may	
rung Log#1	
<u> </u>	
CONSTRUCTI	ON DETAILS
of well: MCM(tox)	ven Ciher
	ven Cine.
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ome 🗆 Industry 🗀 Tes	st Irrigation
Julic Supply Stock Off	ner (specify)
backening. Hollow Ste	· · · · · · · · · · · · · · · · · · ·
	ev, rotary C Bucket rig
g length feet	Diameter inches
n length	Diameter
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of pump setting	
qmuq 1c	
Jomersible Shallow- De	ep-well — Other — (specify)
WELL CAPA	ACITY TEST
x one:	7/1
ailing Pumping	
416	Drawdown
level gpm	hrs feet
1 to water)	
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r quality (clear, cloudy, odor, etc.)	[+ feet
r quality (clear, cloudy, odor, etc.)	+ feet

EEF. 14	, PAGE 2	200	4
OWNER - CONTRACTO	R		
a.M. General			-
701 West Chippeux	1. OW	• .	: i
Building contractor			
Address			
Dritting contractor			
Bruser-Morner -	,		
4518 Taylorsville R			
Dayton, Ohio 4:	5424		
Completion date 4 / 5 / 97)	·		
/ /			
WELL LOG		 -	
Formations, type of material	From	. To	
	ft.		ft.
Seo cutac	hone		
Con Caricle	1 week	'	
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Date

(Additional space for Well Log on reverse side)

	!	LOG OF BORIN	NG No. /				
DRING LO	CATION: A Dir	And the second s			STARTED: 4		
URFACE E	LEVATION:			DATE	COMPLETED:	4-5-9	Ð
STRATUM	DESCRIPTION OF MAT	ERIAL	SAMPLE NO à TYPE	SAMPLE DEPTH	BLOWS PER 6" ON SAMPLER	BLOWS/	SAMPLE RECOVERY
), () 5	7.00 SOIL MC B) SAND & SRAN 1	Z5- Z <u></u>	15	0.0 20	1-136.42	37	24
5.0	BR SAND MOI	~-	77	5.0 7.0	C-7 7-10	15	Z4
			(4)	10,0 12,0	5-7	1.2	24
		u)=T	4/-	50	5-5 8-3	: 0	24
		WET	Si-		12-17	19	24
				,			
	3.053.3	0,0'					
		······					
DRILLING M		WATER OBSE	7.0' rh: <i>17.</i> 0		TYPE S A. SF B.	AMPLER:	
MO.:	46813	DEPTH AFTER	// HRS.	T	cs+	ER-MO	

2B12R

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AMEI 408/3	- DATE:	4-5-90 SHEET_	/ 55 /		
UB NUI-1007	_ DAIE!		<u> </u>		
DRING NO.	/	BATE DISTALLED	4-5		<u>_</u>
JIL PONNIS FEET	30.0	SUNFACE ELEV. 5	_	Flush	
JOER SIZE I.D.	21/4	EDITOM OF FORMS	30.0	Mount	Mag
TD. FEIL TESTS	5	LOTTON OF SCREEN	24.0	5_	1716
KELBY TUEES	,	TOP OF SCREEN	14.0		
OCK CERING FEET	-	TOP OF SAND	12,0	D +	
OLE GROUTING FEET	_	TOP OF BENT. PELLETS	9,5	Devi	
ECON. TIME	1.0	TOP OF BENT. SLUERY		Bent Cemeis!	
TERUMS TO		TOP OF BENTI/CEMENT	.5		
CCESS TIME	, 25	TOP OF SOIL PACKFILL	24,0		
MONITORING WELL	_	TOP OF RISER PIPE	.25	2-	
INFORMATION		TEP DE GUARD PIPE		9,5	
ZE OF PIPE	ر" ح	TOP OF N'HOLE COVER	+.25	P +	
PE OF PIPE	FIC	INITIAL WATER DEPTH	17.0	Bent Pellets	
T. DE SCREEN	10.0	COMPLETION BEPTH	17.0	Pellels	
T. OF RISER	5.0	24 HR. WATER DEPTH			
-PS		48 HR. VATER DEPTH		12.5	
LUGS		HR. VATER DEPTH	_		
JUNDS OF SAND	450				
3# BAGS/GDLD SEAL	.5			SAND	14.
DE BAGS/GRANULAR BENTENITE					
JCKETS OF PELLETS 27	1				
DAGS/VOLCLAY					
S# BAGS/CENENT	2				24.0
455 DF SAK-CRETE	2	<u> </u>			H 24.
AGS OF ASPHALT HIX				SOIL ISACK	ු දුරු
JARD PIPE	<u> </u>			, , , ,	
WHOLE COVER	1 /				
STALLATION TINE					
EVELOPMENT TOKE	2.25				1
TAND-BY TINE	<u> </u>				
STALLATION TIME EVELOPMENT TIME TAMB-BY TIME OMMENTS:	2.25				
UMPIEN 131					
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السلساناة فجيفت البناءرو وذجهتهم المساء فضيعها

LOG OF BORING No.

DRING LOCATION: AS DER.

DATE STARTED: 4-6-95

JRFACE ELEVATION:

DATE COMPLETED: 46-90

STRATUM	DESCRIPTION OF MATERIAL SOIL CLASSIFICATION SYSTEM.	SAMPLE 40 à TYPE	SAMPLE DEFTH	BLOWS PER 6" ON SAMPLER	BLO#5/ FT	SAMPLE RECOVERY
20	10122		0.6	1-2	8	17
1.0	BRISADIO (MOST)	AIL	20	6-10		1 / (
		EA	7.0	16-17	30	24
		34	00	6-12	20	- 1
	(WeT)	Чĵ	50	9-7 60-50	3 ^G	7
		-	-			
_	3 0= 3 25.0'					
						
·						
				+		
DRILLER:	METHOD: 4/4" H. SA WATER OBSE INITIAL DEPTH: 1. COMPLETION DEPT	5.0	D	TYPE S Z. A. SP B.	AMPLER	
JOB NO.: [16813 DEPTH AFTER	HRS.	7	c. sh	ELBY TU	BE

NAMEI 41 972		4 / ~-	,		-
JOB NO.1 46015	_ DATE:	1-4-6-90 SHEET /	_ OF	-	•
IDRING NO.	2	DATE RISTALLED	4-6	1011	٢١٢
SOIL BORING FEET	 	SUMFACE ELEV. 4	1—	Flush	1
AUGER SIZE I.D.	4/4	IDITOM OF PORING	25,0	Morri	4//
STD. FEIL TESTS	4	LOTTOM OF SCREEN	24.0		JHT
SKELBY TUPES		TOP OF SCREEN	14.0	7	1
ROCK CORDING FEET		TOP OF SAND		-	
HOLE GROUTING FEET		TOP OF BENT. PELLETS	9.5	12/1	
DECON TIME	,75	TOP OF BENT, SLURRY	1	Bent GROUT	
באטאס דפע		TOP OF BENTL/CEMENT	ı.s	-//	
ACCESS TIME	25.	TOP OF SOIL PACKFILL	1		1111
MONITORING WELL		TUP OF RISER PIPE	.25		
INFORMATION		TOP OF GUARD PIPE	1-	95	
SIZE OF PIPE	2"	TOP OF N'HOLE COVER	0.0	1 2	1111
TYPE OF PIPE	12/0	INITIAL WATER DEPTH	15.0	コーベニング	
FT. OF SCREEN	7.0		150	PelleT=	
FT. OF RISER	(5.0)	 	1		1111
CAPS		48 HR. VATER DEPTH	1	12.0	
PLUGS		HR WATER DEPTH	1		1
POUNDS OF SAND	450		1		
50# BAGS/GDLD SEAL	1/4				1111
1038 BAGS/GRANULAR BENTONITE			1	SAND	日
PUCKETS OF PELLETS				13410-	
50# BAGS/VOLCLAY				1	日
96# BAGS/CENENT	2			1	
EAGS DE SAK-CRETE	1				
PAGS OF ASPHALT HIX			<u> </u>	1 _'	2
GUARD PIPE					
MANHULE COVER	1			1	
NISTALLATION TIME	1			1	
DEVELOPMENT TIME	2.25	1		1	
STATE-BY TIME				1	

COMMENTS					
				· · · · · · · · · · · · · · · · · · ·	

The state of the s

LOG	OF	BORING	No.⇒	2

BORING LOCATION: £5

DATE STARTED: 4.6.90

SURFACE ELEVATION:

DATE COMPLETED: 4-6-90

STRATUM	DESCRIPTION OF MATERIAL SOIL CLASSIFICATION SYSTEM:	SAMPLE NO & TYPE	SAMPLE DEPTH	BLOWS PER 6" ON Sampler	"N" 8LD#5/ FT	SAMPLE RECOVERY
0.0 .25	ASPHAULT MOTST) SM COBBLES BY SAUDO GRAJ SM STLT	ΔΙ	.25 2.25	7-65-3	1/	10
		DA.	50	8-14 18-23	30	/0
8.0	BR SAID MOSTS-N	34	10.0	5.0	2	17
		4/2	50	7-10	25	\propto
	$(a) \in T$	EL		10-13	30	24
) -					
	30.0					
	WATER OBSERY AP # SU COMPLETION DEPTH:	21.5	S		AMPLER:	
JOB NO.:	46813 DEPTHAFTER N	HRS.	T	c. sh	IELBY TUI	3 E

INHMET	•					ŀ
JOB NO.1 46813	. DATE	4-6-90 SHEET 1	_ DF		•	
ECRING NO.	2	DATE DISTALLED	4-6	dish	<u>}-</u>	
SOIL BORING FEET	30.0	SURFACE ELEV.		Flus / 1	XI	
AUGER SIZE I.D.	4/2	EDITOM OF PORING	30.0	17 jov.		
STD. FER TESTS	S	IDITICH OF SCREEN	29.0	5	1111	1.
SKELBY TUEES		TOP OF SCREEN	p.0			
ROCK CORING FEET		TOP OF SAND	17.0			
HOLE GROUTING FEET		TOP OF BENT, PELLETS	15.0	,		
DECON TIME	.75	TOP OF BENT, SLURRY	1	7.1		
DOT DRUAS		TOP OF BENT/CEMENT	.5	GROUT		
ACCESS TIME		TOP OF SOIL PACKFILL				
MONITORING WELL	1	TUP OF RISER PIPE	125	600		
INFORMATION	-	TEP DF GUARD PIPE				
SIZE OF PIPE	[2 "	TOP OF N'HOLE COVER	0.0			
TYPE OF PIPE	714	INITIAL WATER DEPTH	22.0	15.0		
FT. DF SCREEN	100	COMPLETION DEPTH		Ravi		
FT. DF RISER	70.0	24 HR. WATER DEPTH	Z/.5	Dall-15		
CAPS	20101		-	Penton		
	1 /	48 HR. VATER DEPTH				
PLUGS	500	HR VATER DEPTH	+			
POUNDS OF SAND	500			_)
50# BAGS/GDLD SEAL	74			SAND	H	12
100# BAGS/GRANULAR BENTONITE				37,10	H	
BUCKETS OF PELLETS 3	/				H	
EOR BAGS/VOLCLAY	1	<u> </u>				
96# PAGS/CENENT	2					_
EAGS OF SAK-CRETE	<u> </u>					2
EAGS OF ASPHALT MIX				ل ا		3
GUARD PIPE	-					
MANHULE COVER	/_/_					
NISTALLATION TRIE	127					
DEVELOPMENT TIME	2,55					
STA':D-BY THE		<u> </u>				
05.445.470						
COMMENTS		······				
						
						
		<u> </u>		 	· ·	
				·		

	_			RET.	17, 120	F 24 C
	LOG OF BOR	ing No	2			
	· · · · · · · · · · · · · · · · · · ·	<u>-</u>				
BORING LO	OCATION: AS. L=2.		DATE	STARTED:	6-9	\triangle
SURFACE	ELEVATION:		DATE	COMPLETED: 1	1-10-	30
STRATUM	DESCRIPTION OF MATERIAL SOIL CLASSIFICATION SYSTEM:	SAMPLE NO & TYPE	SAMPLE DEPTH	BLOWS PER 6" ON SAMPLER	PLCWS/	SAMPLE RECOVERY
3. ()	(MOSS) W/COBELES RX & BLACK SAND & FRAJ					
		11-	50 70	9.5) /	21
	NO RECOJER J	24	00	7-7	13	0
13.0	32 5200 mozs-1	34	50	9-7	(3)	5
	(D)Etc.	4: ;-	200 22.0	12-36	75	16
	B 053. 30.0°					
DRILLING VRILLER	METHOD: 44" HSA. WATER OB AP 4 SNJ. COMPLETION DE	SERVATION:	5		SAMPLER PLIT SPOO	
JOB NO.:	116813 COMPLETION DE			B C. \$1	HELBY TU	8 E

BOWSER-MORNER

NAMEI			<u></u>		,	E
	- DATE	4-6-70 SHEET/	55 /		45.	
JUB MUITOUN	_ DATE	SHEET /	. Ur /	•	-3/	1
ICRING NO.	4C	DATE PISTALLED	17-69	b Clush >	· \7	
SOIL BORING FEET	30,0	SUBFACE ELEV.	—	Flush Vilou.u'	M.	. }
AUSER SIZE I.D.	4/4	IDITOM OF PORING	30,0	Milas.	M_{\parallel}	<u> </u>
STD. PER TESTS	4	IDITON OF SCREEN	27.0	, 5		
SHELBY TUBES	11	TOP OF SCREEN	17.0			1
ROCK CORING FEET		דםף באיזם	15.0	Ran		#
HOLE GROUTING FEET		TOP OF BENT. PELLETS	13.0	Ban!		1
DECON THE		TOP OF PENT. SLURRY	-	(3,004)		1
בים דמו דמים דמים		TOP OF BENTIZEMENT	1,5	<u></u>		I
ACCESS TIME		TEP OF SUIL PACKFILL	T			
MONITORING WELL	_	TEP OF RISER PIPE	,25			1
INFORMATION	Ī	TOP DE GUARD PIPE	1	17.		4
SIZE OF PIPE	2"	TEP OF HYBRE COVER	0.0			*
TYPE OF PIPE	PIC	INITIAL WATER DEPTH	20.0	1-2-1		· ·
FT. DF SCREEN	100	COMPLETION DEPTH	20.0	Pellets		1000年 日
FT, OF RISER	70.0	24 HR. WATER DEPTH		15,0		\$
CAPS		48 HR. VATER DEPTH	1-	13.0		
PLUGS		HR. VATER DEPTH	1			
POUNDS OF SAND	.501					
50# BAGS/GDLD SEAL	1/2					17.
100# BAGS/GRANULAR BENTOKITE				C. D		<u> </u>
PUCKETS OF PELLETS	/			SAND		
50# BAGS/VOLCLAY		·		/	日	•
96# BAGS/CENENT	3					
EAGS OF SAX-CRETE	1					27.
EAGS OF ASPHALT HIX						30
GUARD PIPE						
MANHULE COVER	/					
DISTALLATION THE						
DEVELOPMENT TIME	12.25					
STATE-BY THE						- 1
COMMENTS:						
COLUMN TO .		······································				一
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	Ų,	DOMING	140.	

BORING LOCATION:

DATE STARTED: 4-7-90

SURFACE ELEVATION:

DATE COMPLETED: 4. 7. 96

20KLYCE E	URFACE ELEVATION:						
STRATUM	DESCRIPTION OF MATERIAL SOIL CLASSIFICATION SYSTEM:	SAMPLE HO d TYPE	SAMPLE DEPTH	BLOWS PER 6" ON Sampler	"N" BLOWS	SAMPLE RECOVERY	
). O , 5	COAL (MOIST BRISAUD W/COBBLES	11-	00 00	6-10	00	18	
	NO REMIERU	ρĤ	50	7-4 5-4	9	۵	
		3,2	0.0	30.5%	راح الح	4	
13,0	BR SAND (MOIST)	46	50	14-16	35	18	
	(1)ET	S.	20.0	50/6	6/10	34	
	3 -						
	B OF B. 28.0'						
				·			
						144	
ORILLER:	PR \$ SU. INITIAL DEPTH.	PTH: 184	2		AMPLER:		
30B NO.:	16713 DEPTH AFTER		1	C. SH	ELBY TUE	3 E	

The state of a few market contact and a second and a second and a second a second a second a second a second a	PROFESSION OF THE PERSON	the same that the second section is a second section to the section of the section of the second of the second	The second of the second	- market description of the control	
JDB NO.1_46813	DATE:	4-7-90 SHEET-1	OF <u>L</u>		t de la constant de l
ICRING NO.	5	DATE DISTALLED	14-7-90	Flush	·
SOIL BORING FEET	28.0	SUBFACE ELEV.	1	ווען און	MI
AUGER SIZE I.D.	4/4	IDITOM OF PORDAG	23.0	Mount	
STD. PEN TESTS	5	IDTTOH OF SCREEN	ZS.0	عب_ ``	
SHELBY TUBES		TOP OF SCREEN	15.5		
ROCK CORING FEET		TEP DE SAND.		7.	
HOLE GROUTING FEET		TOP OF BENT. PELLETS	11.0	Bont.	
DECON THE	,5	TOP OF BENT. SLURRY	1-	(Rout	
DOT DRU:15	_	TOP OF BENTI/CEMENT	. 5	Δ.,	
ACCESS TIME	.25	TCP OF SOIL PACKFILL	1-		
MONITORING WELL		TUP OF RISER PIPE	:25	11.0	
INFORMATION		TOP DE GUARD PIPE		25.	
SIZE OF PIPE	2"	TOP OF HYDLE COVER	0,0	Bent. Pr/ets	
TYPE OF PIPE	PIC	INITIAL WATER DEPTH	18.0	PaleTS	17,33
FT. DE SCREEN	10,0	COMPLETION DEPTH	18.0	13,0	3
FT. DF RISER	20.0	24 HR WATER DEPTH	1 —		* 10 July 1
CAPS	1	48 HR. VATER DEPTH			# # # # # # # # # # # # # # # # # # #
PLUGS	1 1	HR. VATER DEPTH	_		E .
POUNDS OF SAND	450			,5	
50# BAGS/GULD SEAL	1/4			SAND	
1038 BAGS/GRANULAR BENTONITE				<i>)</i> .	日一
BUCKETS OF PELLETS	/				
50# BAGS/VOLCLAY					
968 BAGS/CENENT	2				
EAGS OF SAX-CRETE	/				
EAGS OF ASPHALT MIX					73
GUARD PIPE					4
MANHULE COVER	/				1
TISTALLATION TIME					
DEVELOPMENT TIKE	2.25				
STATID-BY THE			1		
COMMENTSI				-	
			····		
		·	 		

LOG OF BORING No. 6

BORING LOCATION: A Diz

DATE STARTED: 4/16/90

SURFACE ELEVATION:

DATE COMPLETED: 4-16-90

		,				
STRATUM	DESCRIPTION OF MATERIAL SOIL CLASSIFICATION SYSTEM:	SAMPLE NO d TYPE	SAMPLE DEPTH	BLOWS PER 6" OH SAMPLER	BLOWS FT	RECOVERY
3.0	ASTALT	\$		47.1.5	=/	'ح
125	BRSmo SmGON. Sm Sit (Moist) /A	,5-2,	5		
		'				
		ZA	5-7	6-8-12-44	20	ح
		3A	10-17	1 4 3-4-5	7	18"
		44	15-1	7 8-9-8-11	17	12"
1						
17.0	BROWN SAND (WET	50	19.5-2	1.5 4-5-15-16	20	18"
	<i>*</i>					
	BofB (30.0)					
	1000 0 1 00.0					
			 			
DRILLING	METHOD: HSA WATER OBSI	_		TYPES	AMPLER:	:
ORILLER:	A.Z. R.C. INITIAL DEPTH: COMPLETION DEPT			⊘. A. SP □ B.	LIT SPCC	N
ЭОВ НО.:	74813 DEPTH AFTER			B. C. SH	ELBY TU	8 E
						20150

BOWSER-MORNER

And the same of th	The state of the s					
JOB NO.1_46813	DATE	4-16-90 SHEET	OF	٠.	į	/
IDRING NIL		DATE DISTALLED	4-16	Flush	\ \{	_
SOIL BOAINS FEET	30,0	SURFACE ELEV.	1-	+	M	_
AUGER SIZE I.D.	4/4	LOTTOM OF PORING	30.0	Mount	Mir	1
STD. FEL TESTS	Ś	IDITION OF SCREEN	77.0	<u>.s</u>		12
SHELBY TUPES		TOP OF SCREEN	17.0			
ROCK CERDIG FEET	1	TOP OF SAND	15.0	_ +		
HOLE GROUTING FEET		TOP OF BENT. PELLETS	13.0	Ben1		
DECON THE	1.0	TOP OF BENT, SLURRY		Bent Grout		
DOT DRUMS		TOP OF BEHT/CENENT	,5	(3K24)		
ACCESS TIME	.25	TEP OF SOIL PACKFILL				
MONITORING WELL		TUP OF RISER PIPE	25.	1		
INFORMATION	-	TOP OF GUARD PIPE		13.0		}
SIZE OF PIPE	2"	TOP OF N'HOLE COVER	0.0	-13:4		
TYPE OF PIPE	12/c	INITIAL WATER DEPTH	20.0	Ban?		
FT. DF SCREEN	10,0	COMPLETION DEPTH	20.0	Pellets		
FT. DF RISER	72.0	24 HR. WATER DEPTH	-	1211011		
CAPS	1, , , ,	48 HR. VATER DEPTH	-	15.0		
PLUGS	1	HR VATER DEPTH	+==	1		3 ·
פטטט פר געונ ט	450	130 7776 20 111	 			J
SON BAGS/GOLD SEAL	1/4	 	1			17.
100# BAGS/GRANULAR BENTONITE	/7	1		- 1	H	1 /1.2
BUCKETS OF PELLETS	1/		+	SAND		
50# BAGS/VBLCLAY	1		 	1	H	***
96# BAGS/CENENT	2	1	+	1		
EAGS OF SAK-CRETE	1-	1	+	1	H	27.3
EAGS OF ASPHALT HIX		1	-	1		30.0
GUARD PIPE		1	-		<u></u>	بر.رن
HARHILE COVER	1 / 1		-			ŀ
HISTALLATION TIME	+-	 	 			ŀ
SEVELOPMENT TIME	7.25		 			Ī
STATIO-BY THE	-		1	1		ł
3170 100 001 1 21100		Ш		1	•	Ī
COMMENTS						
) (a) (i) (i) (i) (i) (i) (i) (i) (i) (i) (i	 -					
						
						
						7

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LOG OF BORING No. >

BORING LOCATION: AS LIE.

DATE STARTED: 4-/17/90

SURFACE ELEVATION:

DATE COMPLETED: # = 2)

STRATUM	DESCRIPTION OF MATERIAL SOIL CLASSIFICATION SYSTEM.	SAMPLE NO à	SAMPLE DEPTH	BLOWS PER 6" ON SAMPLER	"N" BLD#5	SAMPLE
0 O	RSTALT			3227322		
,2 =	Z SAND EIN STREY. STREET	10	5-25	8-22-20-25	1/2	100
1.0	Black SAND Son Sitt Son GARV.	2 12	<i>5</i> ·7	15-7-5-5	12	18"
<u>/</u> 0, 9	30000 (ma=57)			7-8-11-12		
	WET AT 15.5			3-7-10-11		
	B of B (25.0					
DRILLING N	SETHOD: HSH WATER OBSERV	ATIONS		TYPES	AMPLER	
PILLER:	A.R. Z.L INITIAL DEPTH: COMPLETION DEPTH: DEPTH AFTER N	15.5		汉 : A. SP ☐ B. ☐ C. SH		

BOWSER-MORNER

A STATE OF THE STA	and the second s	ा र्वे कुल्ली क्रांडेन व्यक्त राज्य विकास करते हैं है जिसके हैं है कि किस के किस के किस के किस के किस की किस की		AND THE PROPERTY OF THE PERSON	A. Landandaria	-1
JOB NO.1 46813.	DATE	SHEET /	_ OF/_	. \		
LORING NO.	7	DATE RISTALLED	4-17	111	A	3
SOIL BORING FEET	125	SUCFACE ELEV.		Flush	\ -	3
AUGER SIZE I.D.	4/4	IDITEM OF PERING	25.0	Ho-T	╢╟	
STD. PEL TESTS	4	LIDTTOM OF SCREEN	2,55	, 5_		. 25 t
SHELBY TUBES	_	TOP OF SCREEN	125			I
ROCK CORING FEET		TOP OF SAND	10.5			
HOLE GROUTING FEET		TOP OF BENT, PELLETS	3.5	Ben		1
DECON TIME	.5	TOP OF BENT, SLURRY		B=AT GROUT		
POT DRUAS		TOP OF BENT/CENENT	.5	-/-		\$
ACCESS TIKE	.25	TOP OF SOIL PACKFILL				
MONITORING WELL	_	TUP OF RISER PIPE	.25.			*
INFORMATION	Ī	TOP OF GUARD PIPE	1-	8.5		1
SIZE OF PIPE	2"	TOP OF HINDLE COVER	0.0			1
TYPE OF PIPE	PVC	INITIAL WATER DEPTH	15.5	Beru		3
FT. OF SCREEN	10.0	COMPLETION DEPTH	15.5	Pellets		7
FT. OF RISER	15.0	24 HR. WATER DEPTH		.,		- - - - - - - - - -
CAPS		48 HR. VATER DEPTH	1-	10.5	$ \ \ $	i i
PLUGS		HR. VATER DEPTH	1			#
POUNDS OF SAND	900		1	_		1
50# BAGS/GDLD SEAL	1/4			SAND		12.5
1000 BAGS/GRANULAR BENTENITE					日日	于
BUCKETS OF PELLETS	1					#
SC# BAGS/VOLCLAY				1	日	1
960 BAGS/CENENT	2			1		
BAGS OF SAK-CRETE	1				181	22,0
BAGS OF ASPHALT HIX						25. du
SUARD PIPE]		
WANTLE COVER]		
HISTALLATION TIME]		a.
MEVELOPMENT TOKE	7.25]		73
TAID-BY THE]		
COMMENTS						
						}

LOG OF BORING No. 8

BORING LOCATION: AS DTR.

DATE STARTED: 4/17/90

SURFACE ELEVATION:

DATE COMPLETED: 1/17 75

STRATUM	DESCRIPTION OF MAT	ERIAL	SAMPLE I NO & TYPE	SAMPLE DEPTH	BLOWS PER 6" ON Sampler	"N" BLOWS/ FT	SAMPLE RECOVER
0.0	ASPHALT						
.25	BLACK SAMD SELF.	Sm SPAREL	تبر/ ^{(۱} ۲۶	.5-2.5	4-12-7-1	19	18"
			2 A	5-7	3-4-4-4	8	12.
			3,0	10-12	4534	8	ا نتے د
160	BR.SAND	(e.e.	40	15-17	3-6-5%	56/	12
700	SE.SAVO	()AB	257) / 2	/3//	15 0 15		
	wet @ 20.5		5A	20.22	4-9-21-30	35	18"
4	3:						
	B of B	30.0					
					,		
	AETHOD: HSA F.R. R.C.	WATER OBSINITIAL DEPTH:	20.5		🔀 A. SP	AMPLER: LIT SPOOI	
JOB NO.:	11,813	DEPTH AFTER			В. с. sн	E: 0 - Ti-	ıF

MACICI	_					34 A.
10B NO.1 46813 -	DATE	4-17-90 SHEET 1	nf /		:	. ₹
		3,:		`		/ • -
DRING NO.	8	DATE DISTALLED	9-17	Flush,	1	/- k
GIL BORING FEET	30.0	SURFACE ELEV.	1	Flush	M	
USER SIZE I.D.	1/4	IDITEM OF PERING	30.0		$A \cap A$	T = 7
TD. FEH TESTS	5	IDITOH OF SCREEN	26.0	6	' '	, Z
HELBY TUPES		TOP OF SCREEN	16.0	<u>. S</u>		alvi≤ ⊯pni
DOK CERING FEET		TOP OF SAMD	1:0			
OLE GROUTING FEET		TOP OF BENT. PELLETS	12.0	Bart. Grant		
ECON TIME	,5	TOP OF BENT. SLUERY		(5.12m)		-
DRUAS		TOP OF BENTI/CEMENT	·S	Q.		
CCESS TIME		TOP OF SOIL PACKFILL	27.0			
MONITORING WELL	_	TUP OF RISER PIPE	25.			1
INFORMATION		TOP OF GUARD PIPE		12.0		+
IZE OF PIPE	2"	TOP OF KHOLE COVER	0.0	2.7		
YPE OF PIPE	PIC	INITIAL WATER DEPTH	Sos	Bent		
T. DE SCREEN	10.0	COMPLETION DEPTH	20.5	Pellets		
T. DF RISER	20.0	24 HR WATER DEPTH		ИЛ		
∴°S	1	48 HR. VATER DEPTH		<u>#0</u>		
LUGS	1	HR WATER DEPTH				1
JUNDS OF SAND	450					100
D# BAGS/GDLD SEAL	1/4					16.0
33# BAGS/GRANULAR BENTENITE	_			SAND	目	
UCKETS OF PELLETS 5-	/				Ħ	*
S# BAGS/VOLCLAY					H	
S# RAGS/CENENT	2				甘	
AGS DE SAK-CRETE	1			ح ۲. ه	H	26.80
AGS OF ASPHALT HIX				Soll BACKFILL		30.500
UARD PIPE				BACKFILL		
ANHOLE COVER	1 /					
STALLATION TINE						cx Sail
EVELOPMENT TIME	2.25					rai
TAUD-BY TIPE						<u> </u>
						n te
COMMENTS						, c
						_
		<u> </u>	<u>. بمنغ معاور و رو مورور</u> - دد:			
	**	. La Francia de Caracteria de				THE PROPERTY OF

			LOG OF BORIN	IG No.	7						
	BORING LO	CATION: AS DES	2.		DATE	STARTED: /	1/17/	6,			
	SURFACE E	LEVATION:		DATE STARTED: 1/18/5							
	STRATUM	DESCRIPTION OF	FMATERIAL	SAMPLE NO & TYPE	SAMPLE DEPTH	BLOWS PER 6" ON SAMPLER	BLOWS.	SAMPLE RECOVERY			
	D. D	BR SAND & GR	(Most)	14	0.0 -2.0	5-14-14	22	17"			
						8-21-36-22	}				
						7-9-9-1		12			
ور	16.0	BA SAND	(wet)	44		9-7-5-7		0			
; J	: .			£ 12		18-5-2-20		18"			
	٠	3 1									
		BofB	30.0								
											
(PRILLER:	METHOD: #5# AF. 24. 16713	WATER OBSE INITIAL DEPTH: C COMPLETION DEPT DEPTH AFTER	н 20.0		≯ ▲. SF □ 8.	AMPLER:	N			
	<u> </u>					BOWS	ER-MO	ORNER			

ING NO.	9	DATE DISTALLED	4-18	11.5	
PORTING FEET	30.0	SUBFACE ELEV.	7.0	Flosh	
ER SIZE I.D.		EDITOM OF PORING	30.0	11/10/21	111 - 6
. PEL TESTS	5	IDITOH OF SCREEN	27.0		11411.25
FBA LAREZ		TOP OF SCREEN	17.0	≤	
K CORING FEET		TOP OF SAIND			
E GROUTING FEET		TOP OF BENT. PELLETS	13.0	Bent GROUT	
CN TIME	.75	TOP OF BEHT. SLURRY		GROUT	
DRU.1S		TOP OF BENT/CEMENT	.5	9160017	
ESS TIME		TOP OF SOIL PACKFILL			
MONITORING WELL	_	TUP OF RISER PIPE	75.		
INFORMATION	İ	TOP OF GUARD PIPE			
E OF PIPE	2"	TEP OF N'HOLE COVER	0.0	10.7	
E DF PIPE	PIC	INITIAL WATER DEPTH	70.0	Ball	
OF SCREEN	10.0	COMPLETION DEPTH	20.0	Pellets	
OF RISER	20.0	24 HR VATER DEPTH			
2	1	48 HR. VATER DEPTH			_
35		HR WATER DEPTH			
COS OF SAND	450			1	
BAGS/GDLD SEAL	1/4]	17.0
BAGS/GRANULAR BENTONITE	_			SAND	
ETS OF PELLETS	1 1				
SAGS/VOLCLAY J	-				
BAGS/CEXENT	2				
DF SAK-CRETE					27.1
OF ASPHALT HIX					30.0
D PIPE]	
TLE COVER	1				
LLATION THE	_				
	2.25			1	
LOPMENT TORE	DAIL/ Coq]	

WATER WELL LOG

- WATER WELL	LOG		 			`		<u></u>
FORMATIONS (Color, type of material, hardness, etc.)	From	То	٤	Co	Ę	To	8	
Pasement	0'	10	Location accepted w/o verification by **Note: The content of the	Courthouse Location By	Field Located	Торо Мар .	COUNTY	
Fand + Gravel	10'	21'	accep	ળી કરા	cated	P		1
Gravelly Clay	21'	55'	red w	cation				
Sand & Gravel with clay	55'	61'	o veri	Ву -	Ву -	Jan 1		
Sand with Clay	161'	75'	ficatio		2	1-	1	
sand + Gravel with Clay	75'	85'	7 à		N	17.50		
Eine Sand	85'	93'	2			-,		
Fine Sand + Gravel	93'	98'	2	Date .	Date .	-		
Hard Sandy clay + gravel	98'	1168	2		00	6	TWP.	
Solid + gravel	116	119'	№		۲.	- (Cu	
Hard Sandy Clay	119	130	22		29	•	7/2	3
		ļ	2/1				(Well	A
			J ² N	1	1	7	(Well driller does not fill out) RGE $2F$ SH	FOR ADMINISTRA
			20			00	does	\$
			0			0	ot fi	2
		<u> </u>	Ft S of N	Ft E	Ft N of SI	Ft W of E	fill out)	USE ONLY
		ļ	N.L.	Ft E of WL.	of SL.	of EL	*	2
				•			72	
		ļ	Aquif	Bedro	Depth	Grour	, ,	
		ļ	Aquifer elevation	Bedrock elevation	Depth to bedrock	Ground Elevation.	M	
		<u> </u>	/ation	vation	drock	vation	_ SEC.	ļ
		<u> </u>	-			- 1		
			00	,		732	1 0	
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			1 25		W	D	THE STATE OF	
			Lot Number		à	3		2
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						S 23	7.44	1 '

DIVISION OF WATER PEF. 14, PAGE 31 F 45

DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA

STATE OFFICE BUILDING

INDIANAPOLIS, INDIANA 46204

Telephone 633-5267 Area Code 317

WATER WELL RECORD

WELL LOCATION (Fill in completely - Refer to instruction sheet)
County in which well was drilled 5+ JOSEPH Civil Township POTTCIGE: Include County Road Names, Numbers, Subdivision Name, lot number, distinctive landmarks, etc.
Section 13 - Location 175' E. of High Street, 175'
N. of Broadway
NAME OF WELL OWNER and/or BUILDING CONTRACTOR
Well Owner Cardinal Battling Company, Inc. Address South Bend, Indiana
Building ContractorPEERLESS - MIDWEST, IRC.
Name of Well Drilling Contractor: P. O. BOX 26 51255 BITTERSWEET ROAG
Address GRANGER, INDIANA 46530
Name of Drilling Equipment Operator: MIKE Garrage
WELL INFORMATION
Depth of well: 130': Date well was completed: March 9, 1977
Diameter of casing or drive pipe: 12" Total Length: 84'
Diameter of liner (if used): Total Length:
Diameter of Screen: 6" IPS Length: 15' Slot Size: .012
Type of Well: Drilled X Gravel Pack Driven Other
Use of Well: For Home For Industry For Public Supply Stock
Method of Drilling: Cable Tools 🛛 Rotary 🗌 Rev. Rotary 🔲 Jet 🔲 Bucket Rig 🔲
Static water level in completed well (Distance from ground to water level) 32 feet
Bailer Test: Hours Tested Rate g.p.m. Drawdown ft. (Drawdown is the difference
Pumping Test: Hours Tested Rate 150 g.p.m. Drawdown 48 ft. level at end of test)
Signature R-1. William
Date
Type of Well: Drilled Gravel Pack Driven Other Use of Well: For Home For Industry For Public Supply Stock Method of Drilling: Cable Tools Rotary Rev. Rotary Jet Bucket Rig Static water level in completed well (Distance from ground to water level) Bailer Test: Hours Tested Rate g.p.m. Drawdown ft. (Drawdown is the difference between static level and water level) Rate 150 g.p.m. Drawdown ft. Signature Signatur

WATER WELL LOG

Location	Court	Fiel	T c	C	1
cation	Ě	<u></u>			
	tho	d Lo	Topo Map.	COUNTY	ş
accel	use Lo	Field Located	þ	Ĭ	
oted w	cation				
/o ver	Ву	Ву			
ificati		120) =	Tr.	2
on by)		-	
	Date	Date	-	1	
		10	6	TWP.	
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		79	,	7/2	. Q
		İ	ł	RGE.	LOR ADMINISTRATA (Well driller does
7				٦ ٢	ADMINISTRATY USE ON (Well driller does not fill out)
20			00	M	TRAT
0			0	V .	not 🕞
FtS	FLE	Fiz	Ft ₩	N8	USE ONLY
	of WL	of SL	of EL	X) ILY
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1			F.	5)
	200 Ft S of NL. Aquifer elevation 602	DateFt E of WL. Bedrock elevation	Date 8-2-29 Ft N of SL. Depth to bedrock Ft E of WL. Bedrock elevation 2200 Ft S of NL. Aquifer elevation 602-	Date 8-2-29 Fit N of SL. Depth to bedrock Fit E of WL. Bedrock elevation 232 Fit S of NL. Aquifer elevation 602-	TWP. 37% RGE. 2 £ SW WSE WWE SEC 13 ****IM)*** Date 8-2-29

REF. 14, PME 32 0545

DIVISION OF WATER RESOURCES
INDIANA DEPARTMENT OF CONSERVATION
609 STATE OFFICE BUILDING
INDIANAPOLIS 9, INDIANA

WATER WELL RECORD



INFORMATION ON WELL LOCATION
County in which well was drilled: State of Civil Township: Wanen
Congressional township: Range: Rif -/34 Number of section: 13 (Fill in as completely as possible)
Describe in your own words the well location with respect to nearby towns, roads, streets
or distinctive landmarks: Located on Cumstour Huy
St Rg 223 & mile NE of Peach Rd & mi SW & Pine
Rd. on east Side
Name of owner Mr. Madilan Nuhanc Address: 57860 78 R 2 SO. Ben
Name of Well Drilling Contractor: Manie Well Drilling
Address: IR, # 119 Month Schenty, Just.
house of Drilling Equipment Operator: Qack 7 Marin
INFORMATION ON THE WELL
Completed depth of well: 64 ft. Date well was completed: 1963
Diameter of outside casing or drive pipe: 2" Length: 60'
Diameter of inside casing or liner: 1111 Length: 491
Diameter of inside casing or liner:
Type of Well: Drilled Gravel Pack Driven Other
Use of Well: For home For industry For public supply Stock
Method of Drilling: Cable Tools Rotary Rev. Rotary Jet Driven Driven
Static water level in completed well (Distance from ground to water level) 3 ft.
Bailer Test: Hours tested Rateg.p.m. Drawdownft. (Difference between
Pumping Test: Hours tested 3 Rate 10 g.p.m. Drawdown ft. level at end of test)
Nach 7 m

Date

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THIS SHEET

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FOR WELL LOG SPACE

INSTRUCTIONS

This Water Well Record form is designed to record the most essential data concerning a water well. We request that you be as accurate as possible in recording this information as it may be of great assistance in the planning and development of new water supplies.

An accurate location of the well is equally as important as an accurate well log.

Please include all information possible in the space provided for well location.

REMARKS:

As specified in Chapter 6 of the Acts of 1959, a copy of this report must be submitted within thirty days after the completion of a well to the Division of Water Resources, Indiana Department of Conservation.

REF. 14, PAGE 33 OF 45

DIVISION OF WATER DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA STATE OFFICE BUILDING INDIANAPOLIS, INDIANA 46204

F INDIAN W Russ CONTROL OF THE STREET THE ST

Telephone

317-232-4160

WATER WELL RECORD

WELL LOCAT	_ III I	n completely - Refer to	instruction sheet)		· ·
County in which w	vell was drilled	57. Joseph	Civil Townsh	ip	·
	to the well location	. Include County Road	Names, Numbers, S	ubdivision Name, lo	t number, distinctive
-		ianumaks, etc.	45	· ¬ >/	Y
	on 056-	Deelletin	$\frac{r}{r}$	/ /-5/	
	South of	5 Beelletin Sample St	treet and	West of	
	encolur !	Way			
		JILDING CONTRACTO			
Well Owne	r Cety of	South Bend Ad	ldress		
Puilding C	\mathcal{J}	Δ.	14		
Name of Well Drill	ing Contractor:	Austin Die	lling one	ano	
				<i></i>	
ame of Drilling E	quipment Operato	r:			· · · · · · · · · · · · · · · · · · ·
WELL INFORM	MATION				·
	No.				
Depth of well:	_7/	Date we	ell was completed: _	6/16/27	
Diameter of casing	or drive pipe:		Total Length:_		
Diameter of liner (if used):		Total Length:_		·
Diameter of Screen	n:	Length:		Slot Size:	
Type of Well:	Drilled 🗌	Gravel Pack	Driven	Other _	
Use of Well:	For Home	For Industry	For	Public Supply	Stock 🗌
Method of Drilling	: Cable Tools	Rotary .	Rev. Rotary	7 ° ° _6~	et Rig 🔲
Static water level i	n completed well (I	Distance from ground to	water level)	20	feet
Bailer Test:	Hours Tested	Rate	.p.m. Drawdown_		and any is the difference
44	C. 1 18 A	make the second	3.46	bett	wdown is the difference ween static level and water
Pumping Test:	dours Tested	Rate	.p.m. Drawdown	ft. leve	at end of test)
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		Date		e===1/85	

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WATER WELL	LOG	-				2.7	
FORMATIONS (Color, type of material, herdness, etc.)	From	To	-		711		0.00
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coarse sand with little grave	0 10	12	v/o ve	. Ty	¥	aut t	
Coarse sand and grave	12	14	rificat				(A)
black loany sand	14	16	ion by			3ku	18
heavy gravel	16	18		· .		0	2
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coarse sand with some gravel	35	48			į	1/2	W
line to medeum sand	48	51					1 1 1 1 1 1 1 1 1 1
fine to midium sand and gran	251	59			}	}	FOR ADMINISTY (Well driller)
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muddy sand and gravel	72	74	.				
souly clay	74	81					TVE I
muddy sand and gravel	81	83	FtS	Ft E	Fix	Ft W	VE W.
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DIVISION OF WATER DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA STATE OFFICE BUILDING INDIANAPOLIS, INDIANA 46204

Telephone 317-232-4160

WATED DECODD

WAIER WELL RECORD	•
WELL LOCATION (Fill in completely - Refer to instruction sheet)	
County in which well was drilled 5t Joseph Civil Township	
Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, dis landmarks, etc.	tinctive
1. USCS R.M. #3 SiG-18	
Jon 1343 Sellelin 3 31 54 0	
from USGS Beelletin #3 Sj 6-1B Sample Street and Lafagette Street	
NAME OF WELL OWNER and/or BUILDING CONTRACTOR	
Well Owner Cety of South Blud Address	
Well Owner Address Address	
Name of Well Drilling Contractor: Austin Drilling Congruy	
Name of Well Drilling Contractor: Huttie Congray	
Address	
Name of Drilling Equipment Operator:	
WELL INFORMATION	
Depth of well: 162 Date well was completed: 1925	
Diameter of casing or drive pipe: Total Length:	
Diameter of liner (if used): Total Length:	
Diameter of Screen: Length: Slot Size:	
Type of Well: Drilled Gravel Pack Driven Other	
Use of Well: For Home For Industry For Public Supply Stock	
Method of Drilling: Cable Tools Rotary Rev. Rotary Jet Bucket Rig	
Static water level in completed well (Distance from ground to water level) 30	fect
between static level as	
Pumping Test; Hours Tested Rate g.p.m. Drawdown ft. level at end of test)	
Signature Low 0565 Bullion #15	1
	**

FORMATIONS (Color, type of material, herdness, etc.)	From	To		Ω	্ম	T C
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Layne-Northern Company

Layne-Western Company, Ing. 14.

	FROM NATURAL GROUND LEVE						
FORMATION FOUND — DESCRIBE FULLY	Depth to Top of Stratum	Depth to Bottom of Stratum	Thickness of Stratum	Static Water Level			
Fill	1 0	3	3				
Brown sandy clay	3	13	10				
Coarse sand and gravel	13	68	55				
Brown clay	68	71	3				
Coarse sand and gravel	71	93	22	31			
Brown clay	93	95	2				
			1				
3 7:							

						·	
Hole 12 "Dia Drilled by:	Cable Tool	Rotary	x	_ Jetting _		_	
Did Dillied by:	Reverse Circ	Bucket		_ Auger_		_	
Rotary Hole Grouted: Neat Ceme	ntX	_ Drilling Mud		Othe	r		
Casin 9-5/8 "OD From 24	''above grou	nd to <u>77</u>	feet below	ground. We	eight5	5 Pound	s per foot
Screen 6 "Set from 77	to <u>92</u> feet	Make _	Johnson	_ Type PV	<u>c</u>	Slot <u> 03</u>	5
Pumping test 250 G	PM drawdown to	Air	feet after	1	_ hours pui	nping	
Date Completed 9-22-82	Dril	ler <u>Don</u>	Snyder				- · · •
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WATER WEL	L LOG							
FORMATIONS (Color, type of material, hardness, etc.)	From	То	Location ac	Courthouse	Field Located	Topo Map	COUNTY	
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			Aquifer elevation	Bedrock elevation	Depth to bedrock	Ground Elevation_	SEC SEC	
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Layne-Northern Company

Division of Layne-Western Company, Inc.

Division of Layne-Western Company, Inc.

	Division of Cotine mestern c	7 TABLE	-
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WELL LOG No. 2	ITY South Bend	Comp	Joseph
Owner Harbor Metal		Township	Portage
* Water Return We	11		2, T37N, R3E
Location		State In	diana
From Land Description	SE'z, SE'z, NW'z	The state of the s	
From Street or Road	75' W. of Rush Street.	600 Nanofasample Stre	et

	FROM NATURAL GROUND LEVEL						
FORMATION FOUND — DESCRIBE FULLY	Depth to Top of Stratum	Depth to Bottom of Stratum	Thickness of Stratum	Static Water Level			
Top soil	0	1	1				
Fine to medium sand	1	10	9				
Coarse sand and gravel	10	50	40				
Brown clay	50	52	2				
Grey clay	52	82	30				
Medium sand to coarse gravel	82	88	6				
Soft grey clay	88	97	9				
Fine to medium sand	97	108	11	21'			
Coarse sand and gravel	108	125	17				
Grey clay	125	127	2				

Hole $\frac{12}{}$ "Dia Drilled by: $\left\{egin{array}{ll} {\sf Cable Tool} & & & & \\ {\sf Reverse Circ.} & & & \\ {\sf Bucket} & & & \\ \end{array} ight.$	Jetting
Reverse Circ Bucket	Auger
Rotary Hole Grouted: Neat Cement <u>X</u> Drilling Mud	Other
Casing 6 "OD From 24 "above ground to 100 feet below	ground. Weight 4.0 Pounds per foot
Screen 6 "Set from 100 to 125 feet Make Johnson	Type PVC Slot035
Pumping test SPM drawdown to feet after	1 hours pumping
Date Completed 9-16-82 Driller Don Snyder	
•	

FORMATIONS (Color, type of material, hardness, etc.)	From	To	<u>د</u> د	7 F 7 C
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		dr	1	Name Name
		1 2 La	- 	Subdivision Names LAVIE - 16-872
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Telephone 317-232-4160

WATER WELL RECORD

	WALLE WEST	REGUE		a servere est
WELL LOCATION	(Fill in completely - Refer to	o instruction sheet)		
County in which well was dr	illed St. Jaseph	Civil Township_		
•	Illocation: Include County Road	l Names, Numbers, Subdiv	rision Name, lot n	umber, distinctive
ounty in which well was drilled St. Jasph Civil Township Include County Road Names, Numbers, Subdivision Name, lot number, distinct landmarks; etc. 117 South Langette Street / From USGS Bulletin #B Sj 32 AME OF WELL OWNER and/or BUILDING CONTRACTOR Well Owner Davier Lawrency and Address Building Contractor: Smith-Monte Conyany Idress Mishigan - Include County and Development Conyany ame of Drilling Equipment Operator: ELL INFORMATION epth of well: 140 Date well was completed: Siptember 25, 1937 iameter of casing or drive pipe: 10 Total Length: iameter of Screen: 9½ Length: 21 Slot Size: 25	leter # #			
3132	· · · · · · · · · · · · · · · · · · ·			
NAME OF WELL OWNER :	and/or BUILDING CONTRACTO	PR		
Well Owner Day	vies Lowndy and Ac	idress	···-	
				
Name of Well Drilling Contr.	actor: Smith-Mou	or Consuy	·	
			Consant	
41 - James -				
WELL INFORMATIÖN	J.			
Depth of well:	Date w	ell was completed:	tember 25	, 1937
Diameter of casing or drive 1	pipe:	Total Length:		· · · · · · · · · · · · · · · · · · ·
Diameter of liner (if used):		Total Length:		
Diameter of Screen: 9	<u>1/2</u> Length: 21	Slot	Size: <u>925</u>	·
Type of Well: Drilled	Gravel Pack	Driven	Other	
Use of Well: For Home	For Industry	For Publi	c Supply 🔲	Stock 🔲
Method of Drilling: Ca	ble Tools Rotary	Rev. Rotary 🔲 Jet	Bucket R	ig 🔲
Static water level in complet	ed well (Distance from ground to	water level)	36	feet
Bailer Test: Hours Tes	ted Rate	p.m. Drawdown	ft. Drawdon	wn is the difference static level and water
Pumping Test: Hours Tes	ted Rate 350 12	pm. Drawdown 14	ft. level at es	
	Sion	han 180	5 B.M.t.	75
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FORMATIONS (Color, type of material, hardness, etc.)	From	To	-	D	71	-	C
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fine yellow sand	83	124	on by			Bu	
sand and gravel	124	140				8	
U				Date	Date	E	
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Telephone 317-232-4160

							4. 4
WELL LOCA		ll in completely - Refer	to instruction	sheet)			
County in whic	h well was drilled_	St. Joseph	Civil	Township_			
•	ns to the well locat	ion: Include County Ros	d Names, Nu	mbers, Subdi	vision Name, lo	t number,	distinctive
-	•	ianumana, cic.	Land.	of K	Diver .	hom	
USG	S Bullet	h , Eddy 5	: 8-8				
	7	BUILDING CONTRACTO					
Building	g Contractor	A	.ddress				
Name of Well D	Orilling Contractor:	7					
		· · · · · · · · · · · · · · · · · · ·					-
		ator:					
WELL INFO Depth of well: Diameter of cas		Date v	vell was comp Total I	leted:	Janny)	9//	
Diameter of line	er (if used):		Total I	ength:		 	
Diameter of Scr	reen;	Length:		Slot	Size:		
	Drilled 🗌			en 🔲	,	· · · · · · · · · · · · · · · · · · ·	
Use of Well:	For Home	For Industry				,	
	•	the state of the s	Rev. Rotary			- <u></u>	y craw,
Static water lev	el in completed wel	ll (Distance from ground t	o water level)				feet
Bailer Test:	Hours Tested	Rate		San Carried Street	ft. Dn	wdown is th	e difference
Pumping Test:	Hours Tested	Rate	gp.m. Dray		Detw	at end of tes	LET WITH MUTEL
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WATER WELL			Accessory.			
FORMATIONS (Color, type of material, hardness, stc.)	Frem	Te	2	8 3	#	Ω
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State Form 35680

Telephone

317-232-4160

WELL LOCATION (Fill in completely - Refer to instruction sheet)
County in which well was drilled St Jaseph Civil Township
Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinct
landmarks, etc.
from OSGS Bullilin # 3, Sj 48, 220 South Michegan St
NAME OF WELL OWNER and/or BUILDING CONTRACTOR
Well Owner J. C. Penny Commany Address
Well Owner J. C. Penny Company Address
Name of Well Drilling Contractor: Howard Coules
Name of Well Drilling Contractor: Howard Gulls
.address
Name of Drilling Equipment Operator:
WELL INFORMATION
Depth of well: 160 Date well was completed: June 29, 1937
Diameter of casing or drive pipe: Total Length:
Diameter of liner (if used): Total Length:
Diameter of Screen: Length: Slot Size:
Type of Well: Drilled Gravel Pack Driven Other
Use of Well: For Home For Industry For Public Supply Stock
Method of Drilling: Cable Tools Rotary Rev. Rotary Jet Bucket Rig
Static water level in completed well (Distance from ground to water level)
Bailer Test: Hours Tested Rate g.p.m. Drawdown ft. Drawdown is the differen
mping Test: Hours Tested Rate g.p.m. Drawdown ft.
Signature John USGS Bulleter # 15:
75 1 10,112 275

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	WATER WEI	L LOG	<u> </u>			· · :	
FORMATIONS (Color, type of materia	i, hardness, etc.)	Frem	To	7 0	71)	:: H	0
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DIVISION OF WATER STATE OFFICE BUILDING

INDIANAPOLIS, INDIANA 46204

Telephone

317-232-4160

WELL LOCATION (Fill in completely - Refer to	•
County in which well was drilled St. Joseph	Civil Township
Driving directions to the well location: Include County Road	Names, Numbers, Subdivision Name, lot number, distinctive
landmarks, etc.	
from USGS Beelletin #	=3 5; 7-/2
1 Solla Punh	=3 5j 7-/z
NAME OF WELL OWNER and/or BUILDING CONTRACTOR	
Well Owner Cly of Journ Dend Add	Iress
Well Owner City of South Bend Add Building Contractor Add	lress.
1. A D. 11	
Name of Well Drilling Contractor: Austin Drille	he Confany
Address	· · · · · · · · · · · · · · · · · · ·
Name of Drilling Equipment Operators	
Name of Drilling Equipment Operator:	· · · · · · · · · · · · · · · · · · ·
WELL INFORMATION	
WELL INFORMATION	
Depth of well: 333 Date well	l was completed:
Diameter of casing or drive pipe:	Total Length:
Diameter of liner (if used):	Total Length:
Diameter of Screen: Length:	
Type of Well: Drilled Gravel Pack	Driven Other
Use of Well: For Home For Industry	For Public Supply Stock
Method of Drilling: Cable Tools Rotary R	kev. Rotary Det Bucket Rig D
Statio water level in completed well (Distance from ground to v	water level)
Bailer Test: Hours Tested Rate g.r	o.m. Drawdown ft. (Drawdown is the difference
	between static level and water
nping Test: Hours Tested Rate 8.p	o.m. Drawdown ft. level at end of test)
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WATER WELL LOG

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FORMATIONS (Color, type of material, hardness, etc.	.)	Trom	To	_			•	
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Telephone 317-232-4160

WELL LOCATION (Fill in completely - Refer to instruction sheet)
County in which well was drilled St. Toregh Civil Township
Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctive landmarks, etc.
Northwest corner of Main and Washington Streets, from USGS Bulletin #3 Sj 32
USGS Bulletin #3 Sj 32
NAME OF WELL OWNER and/or BUILDING CONTRACTOR
Well Owner Oliver Hotel Address
Building Contractor Address
Name of Well Drilling Contractor: A. L. Cox and Conyony
ddress
Name of Drilling Equipment Operator:
WELL ÎNFORMATION
Depth of well: 135 Date well was completed: Jan. 20, 1940
Diameter of casing or drive pipe: Total Length:
Diameter of liner (if used): Total Length:
Diameter of Screen: Length: Slot Size:
Type of Well: Drilled Gravel Pack Driven Other
Use of Well: For Home For Industry For Public Supply Stock
Method of Drilling: Cable Tools Rotary Rev. Rotary Jet Bucket Rig
Static water level in completed well (Distance from ground to water level) Static water level in completed well (Distance from ground to water level)
Bailer Test: Hours Tested Rate g.p.m. Drawdown ft. Orawdown is the difference between static level and water
Dumping Test: Hours Tested Rate g.p.m. Drawdown ft. level at end of test)
Signature Vama US65 Bullillus 215
Dip K. M.D. C. S.

WATER WELL	LOG						.* * 3
FORMATIONS (Color, type of material, herdness, etc.)	From	Te	5	Č.	'হা		
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State Form 35680

Telephone

317-232-4160

WELL LOCATION (Fill in completely - Refer to instruction sheet)
County in which well was drilled ST Jaseph Civil Township
Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctive landmarks, etc.
213 N. Sycamore Street - [previous owner Superior
Loundry Company 7 from USGS Bullitin #3 S' 50
NAME OF WELL OWNER and/or BUILDING CONTRACTOR
Well Owner Tauble Prenting Congrey Address Address
Building Contractor Address
Name of Well Drilling Contractor: Smith - Monrol Company
iddress Incliana - Michigan Water Development Company
Name of Drilling Equipment Operator:
WELL INFORMATION
Depth of well:
Diameter of casing or drive pipe:
Diameter of liner (if used): Total Length:
Diameter of Screen: 11/2 Length: 15' Slot Size: lower 8-305/
Type of Well: Drilled Gravel Pack Driven Other
Use of Well: For Home For Industry For Public Supply Stock
Method of Drilling: Cable Tools Rotary Rev. Rotary Jet Bucket Rig
Static water level in completed well (Distance from ground to water level)
Bailer Test: Hours Tested Rate g.p.m. Drawdown ft. Orawdown is the difference
between static level and water Drawdown Texted Pare g.p.m. Drawdown Texted
Signature Some VSGS Bulletin ESTA
Dy Chille 265

FORMATIONS (Color, type of material, hardness, etc.)	Frem	To	2	Ç	31	7.	C
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Telephone 317-232-4160

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WELL LOCATION	ON _{(Fil}	l in completely -	Refer to ins	truction sheet)			
County in which we	ell was drilled_	St. Jan	sh	Civil Township	·)		
Driving directions to		Include Cou	hty Road Nar	nes, Numbers, Sul	bdivision Name, lo	t number,	distinctive
•	1	ianumarks, e		_			
<i>\(\sigma\)</i>	com ()5	73 Dell	eter #	3 , 5/	6-24B		
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		oyette ?					
NAME OF WELL C	•	•					
Well Owner	City of	South Be	Addres	5			
Building Co	ntractor		Addres	s		··	
Name of Well Drilling	C	Mustin	Dill	1. Carre	MA		
reame of wen Drum	ng Contractor:	Jiwww.		ing cong	The state of the s	·	
Address				U			
Name of Drilling Ec	quipment Opera	tor:					
, es.	7:	•				. •	
WELL INFORM	ATION						
Depth of well: 10	00		Date well wa	s completed:	3/27		
Diameter of casing o	or drive pipe: _			Total Length:		·	
Diameter of liner (in	f used):			Total Length:			<u> </u>
Diameter of Screen:			_		lot Size:		
Type of Well: D	rilled 🔀	Gravel Pack		Driven 🗌	Other		
Use of Well: F	or Home	For In	dustry 🔲		iblic Supply 🔲	Sto	ck 🗌
Method of Drilling:	Cable Too	olsRotary	Rev.	Rotary 🔲 J	et 🔲 Bucke	t Rig 🔲	
Static water level in	completed well	(Distance from g	round to water	r level)	46		feet
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ping Test: H	ours Tested	Rate River	3.p.m	Drawdown	ft. level	at end of test	
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WATER WELL LOG

WATER WELL LO	XG	_					
FORMATIONS (Color, type of material, hardness, etc.)	" From	To	2	Ω	37	7	Q
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sand and gravel	89	98	/o ve	¥	•	South	
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DIVISION OF WATER

DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA
STATE OFFICE BUILDING

INDIANAPOLIS, INDIANA 46204

Telephone

317-232-4160



RECORD WATER WELL

WELL LOCATION (Fill in completely - Refer to instruction sheet)
County in which well was drilled St. Joseph Civil Township
Driving directions to the well location. Include County Road Names, Numbers, Subdivision Name, lot number, distinctive
ianumarks, etc.
from USGS Bulletin #3 5j 2-T1
32 leet north of Suremaning and 68 leet
32 feet north of Swiemming pool and 68 feet west of Storage tout Leeper Pork
NAME OF WELL OWNER and/or BUILDING CONTRACTOR
Well Owner City of South Bend Address
Building Contractor Address
Name of Well Drilling Contractor: Harry Ness
Address
Name of Drilling Equipment Operator:
WELL INFORMATION
Depth of well:
Depth of Well: Date well was completed:
·
Diameter of casing or drive pipe: Total Length:
Diameter of casing or drive pipe: Total Length: Diameter of liner (if used): Total Length: Diameter of Screen: Length: Slot Size: Type of Well: Drilled Gravel Pack Driven Other
Diameter of casing or drive pipe: Total Length: Diameter of liner (if used): Total Length: Diameter of Screen: Length: Slot Size: Type of Well: Drilled Gravel Pack Driven Other Use of Well: For Home Stock
Diameter of casing or drive pipe: Total Length:
Diameter of casing or drive pipe: Total Length: Diameter of liner (if used): Total Length: Diameter of Screen: Length: Slot Size: Type of Well: Drilled Gravel Pack Driven Other Use of Well: For Home Stock
Diameter of casing or drive pipe: Total Length:
Diameter of casing or drive pipe:

WATER WELL LO	 G					
FORMATIONS (Color, type of material, hardness, stc.)	"Frem	To	2	8		7 Q
Quaternary system	ę		Location accepted w/o verification by	Courthouse Location	Field Lecated	COUNTY Topo Maj
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sandy day	24	26	ficatio			DH
medium clay	26	SZ	on by			
sandy clay	52	82				
sand and gravel	82	105		Date	Date	E DAY
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DVISION OF WATER

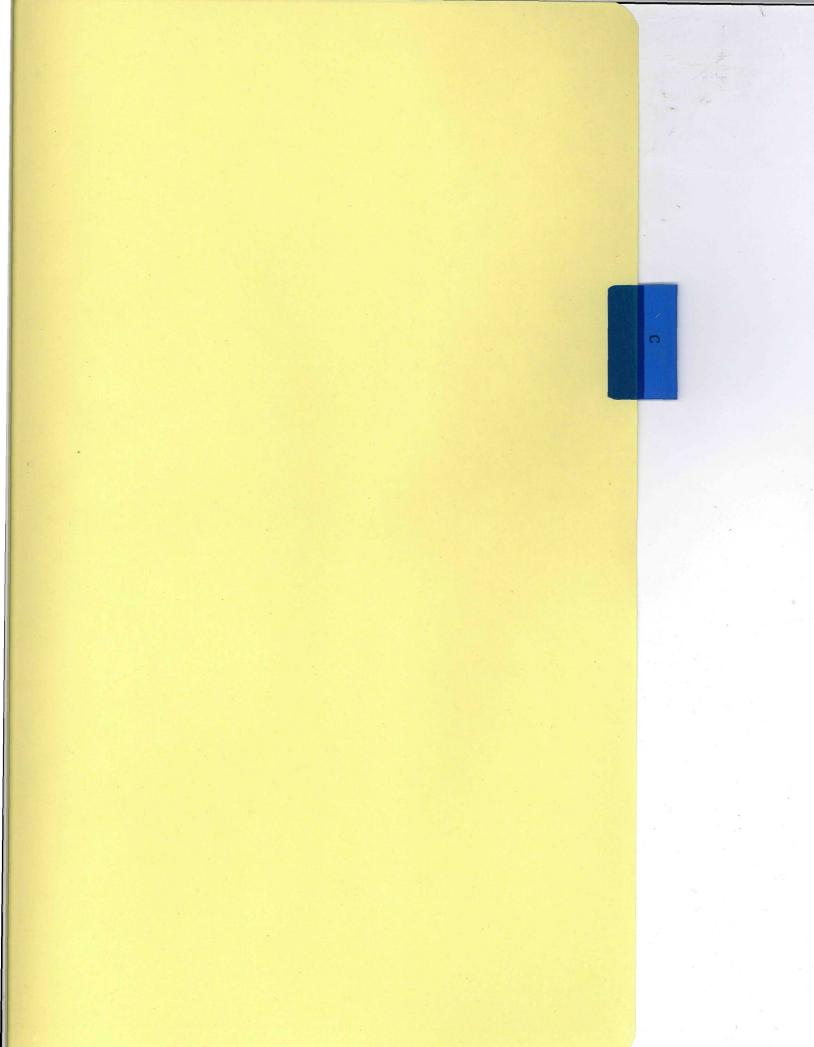
PEPARTMENT OF NATURAL RESOURCES STATE OF INDIANA

STATE OFFICE BUILDING
INDIANAPOLIS, INDIANAE 46204

Telephone 317-232-4160

WATER WELL RECORD
WELL LOCATION (Fill in completely - Refer to instruction sheet)
County in which well was drilled St. Joseph Civil Township
Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctive landmarks, etc.
NAME OF WELL OWNER and/or BUILDING CONTRACTOR
Well Owner Indiana Bell telephon Address
Building Contractor Address
Name of Well Drilling Contractor: Indeana - Mechiga Water Development Comp
Address
Name of Drilling Equipment Operator:
WELL INFORMATION
Diameter of casing or drive pipe: Total Length: 5/
Diameter of liner (if used): Total Length:
Diameter of Screen: 7½ Length: 13 Slot Size: 12
Type of Well: Drilled Gravel Pack Driven Other
Use of Well: For Home For Industry For Public Supply Stock
Method of Drilling: Cable Tools Rotary Rev. Rotary Jet Bucket Rig
Static water level in completed well (Distance from ground to water level)
Bailer Test: Hours Tested Rate g.p.m. Drawdown ft: (Drawdown is the difference
Pumping Test: Hours Tested Rate 120 g.p.m. Drawdown 17 ft. level at end of test)
A CICCE MA
Signature From 6595 millelium /S
Date & Willer 1/85

FORMATIONS (Color, type of material, bardness, etc.)	From	To	THE OWN	(C)	STATES	PROBLEM ST	
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Page: 1

OMB Approval Number: 2050-0095 Approved for Use Through: 4/95

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POTENTIAL HAZARDOUS				ID	ENTIF:	ICATIO	N
			State:		CLIS N		
WASTE SITE				IN	IN	D98492	3440
PRELIMINARY ASSESSME	ENT FORM			CERCLIS	Disc	overy 1	Date:
1. General Site Information	n	***					
Name: SUPER AUTO SALVAGE YARD		Street 3300		ess: MAIN ST	REET		
City: SOUTH BEND	State: IN	Zip Co	ode:	County ST. JO		Co. Code: 141	Cong. Dist: 03
Latitude: Longitude: 41° 38' 32.5" 86° 15' 8.3	Approx.	Area of 14 acre		Status Activ		ite:	
2. Owner/Operator Informat:	ion						
Owner: HAROLD SILBERMAN		Operator: PAUL SCHULTZ					
Street Address:		Street 3300 S		ss: MAIN STR	EET	- 1	
City:		City: SOUTH BEND					
State: Zip Code: Telepl	hone:	State: Zi		Code:	Tele	phone:	
Type of Ownership: Private		How Ini Not Sp		y Identi ed	fied:		

Page: 2

PA-Score 2.1 Scoresheets SUPER AUTO SALVAGE YARD - 03/07/94

DOMESTICAL MAGA	PPOUG			[IDI	ENTIFICAT	ION
POTENTIAL HAZARDOUS WASTE SITE					State: IN	CERCLIS IND984	Number: 928440
PRELIMINARY AS	SSESSMENT	FORM			CERCLIS	Discover	y Date:
3. Site Evaluator Inf	formation		-				
Name of Evaluator: HOLLY GREJDA				anization: E INVESITO		Date Pro 3/15/	
Street Address: 100 NORTH SENATE IGO	CN 1255		Cit	.y: NDIANAPOLI	[S		State: IN
Name of EPA or State HARRY ATKINSON, CHIE		ontact:		lephone: 17/232-892	28		
Street Address: 100 NORTH SENATE IGO	CN 1255		Cit	y: NDIANAPOLI	[S		State: IN
4. Site Disposition ((for EPA ı	use only)				
Emergency Response/Removal ssessment Recommendation: No Date:	CERCLIS Recommen Other Date:	ndation:		Signatur Name: HOLLY (Position ENV. So	Jy Xy GREJDA	k	

				IDI	ENTIFICATION
POTENTIAL HAZARDOUS WASTE SITE				State: IN	CERCLIS Number: IND984928440
PRELIMINARY ASSESSMENT	FORM			CERCLIS	Discovery Date:
5. General Site Characteristic	2S				
Predominant Land Uses Within 1 Mile of Site: Industrial Commercial Residential	Site Sett Urban	ing:	Ве	s of Opereginning Year	Year: 1930
Type of Site Operations: Junk/Salvage Yard				e Generato Onsite	ed:
				Present O	ion Authorized wner
				e Accessi	ble to the Public
			School	ance to No ol, or Wo 100 Fee	
6. Waste Characteristics Info	rmation				
Source Type Quantity Contaminated soil 5.00e+02	Tier sq ft A	Meta			ste:
Tier Legend C = Constituent W = Wastest V = Volume A = Area		Physic Soli Liqu	.d	tate of W	aste as Deposited

DOMENIAL HARADO	OHC.	IDI	ENTIFICAT	'ION
POTENTIAL HAZARDO WASTE SITE	JUS	State: IN		Number: 928440
PRELIMINARY ASSES	SSMENT FORM	CERCLIS	Discover	y Date:
7. Ground Water Pathway				
Is Ground Water Used for Drinking Water Within 4 Miles: No	Is There a Suspected Release to Ground Water: No	List Secon Population Ground Water From:	on Served	l by
Type of Ground Water Wells Within 4 Miles: Municipal Private	Have Primary Target Drinking Water Wells Been Identified: No	0 - 1. >1/4 - 1. >1/2 - 1		14839 0 7437
Depth to Shallowest Aquifer: 102 Feet Karst Terrain/Aquifer	Nearest Designated Wellhead Protection	>2 - 3	Miles Miles Miles	Ì
resent:	Area: None within 4 Miles	Total	wites	57907

Page: 5

IDENTIFICATION POTENTIAL HAZARDOUS State: CERCLIS Number: IND984928440 WASTE SITE IN PRELIMINARY ASSESSMENT FORM CERCLIS Discovery Date: Part 1 of 4 8. Surface Water Pathway Shortest Overland Distance From Any Type of Surface Water Draining Site and 15 Miles Downstream: Source to Surface Water: Other: 79200 Feet NO 15 MILE SW PATHWAY 15.0 Miles Is there a Suspected Release to Site is Located in: Surface Water: > 500 yr floodplain

8. Surface Water Pathway

Part 2 of 4

rinking Water Intakes Along the Surface Water Migration Path: No Have Primary Target Drinking Water Intakes Been Identified: No

Secondary Target Drinking Water Intakes:
None

Page: 6

PA-Score 2.1 Scoresheets SUPER AUTO SALVAGE YARD - 03/07/94

POTENTIAL HAZARDOUS

WASTE SITE

PRELIMINARY ASSESSMENT FORM

IDENTIFICATION

State: CERCLIS Number:
IN IND984928440

CERCLIS Discovery Date:

8. Surface Water Pathway

Part 3 of 4

Fisheries Located Along the Surface Water Migration Path: No Have Primary Target Fisheries Been Identified: No Secondary Target Fisheries:

None

. Surface Water Pathway

Part 4 of 4

Wetlands Located Along the Surface Water Migration Path? (y/n) No Have Primary Target Wetlands Been Identified? (y/n) No Secondary Target Wetlands:

None

Other Sensitive Environments Along the Surface Water Migration Path: No Have Primary Target Sensitive Environments Been Identified: No Secondary Target Sensitive Environments:

None

Page: 7

PA-Score 2.1 Scoresheets SUPER AUTO SALVAGE YARD - 03/07/94

POTENTIAL HAZARDOUS

WASTE SITE

PRELIMINARY ASSESSMENT FORM

IDENTIFICATION

State: CERCLIS Number:
IN IND984928440

CERCLIS Discovery Date:

9. Soil Exposure Pathway

Are People Occupying Residences or Attending School or Daycare on or Within 200 Feet of Areas of Known or Suspected Contamination: No

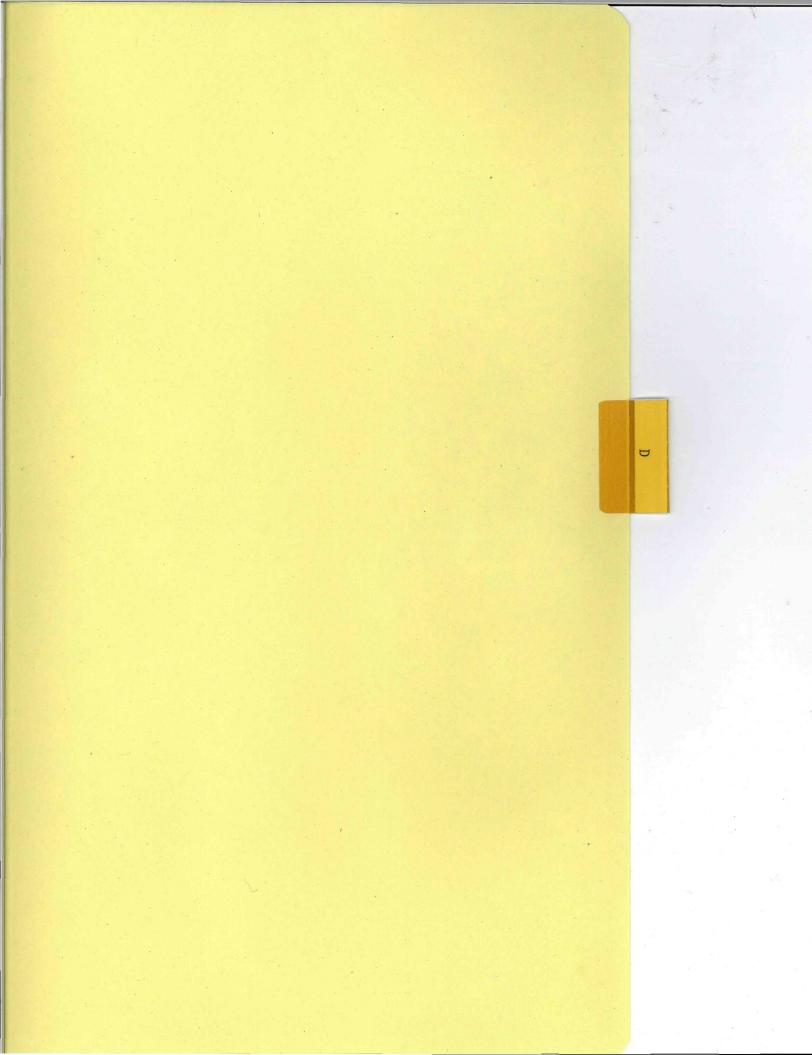
Number of Workers Onsite: 1 - 100

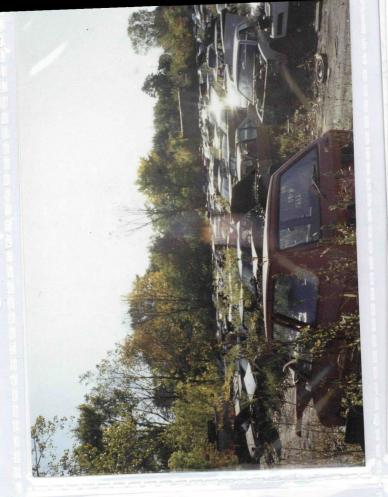
Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination: No

10. Air Pathway

<u> </u>			
Total Population on or Onsite	Within: 20	Is There a Suspected Release to Air:	No
0 - 1/4 Mile >1/4 - 1/2 Mile >1/2 - 1 Mile	2075 4158 11667 25991	Wetlands Located Within 4 Miles of the Site:	No
>2 - 3 Miles >3 - 4 Miles	30835 26885 .01631	Other Sensitive Environments Located Within 4 Miles of the Site:	No

Sensitive Environments Within 1/2 Mile of the Site: None







SITE SUPEZ AUTO SAWAGE YARD

DATE OCTOBEZ 13, 1993

DIRECTION

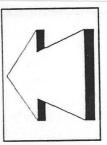
WEATHER SUNNY, HIGH 30'S TO LOW 40'S

PHOTOGRAPHER: JOHN NADDY

SAMPLE ID# (IF APPLICABLE)

DESCRIPTION USED AUTOMOBILES





PHOTOGRAPHY LOG SHEET

SITE SUPER AUTO SALVAGE YARD

DATE OCTOBER 13, 1993

DIRECTION NOIZTH

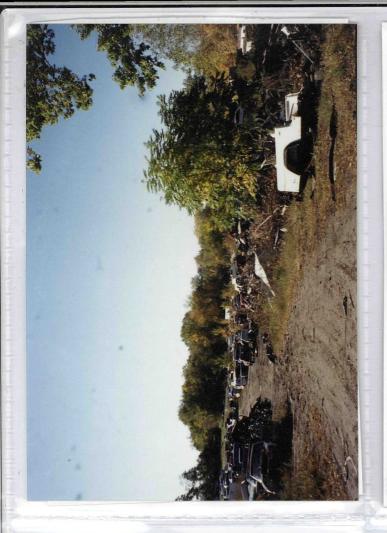
WEATHER SUNNY, HIGH 30'S TO LOW 40'S

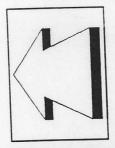
PHOTOGRAPHER: JOHN NADDY

SAMPLE ID# (IF APPLICABLE)

NOT APPUCABLE

DESCRIPTION VSEO ANTOMOBIUS 10WARD NORTHERN BOUNDARY OF SITE.





SITE SUPER AUTO SALVAGE YARD

DATE OCTOBER 13,1993

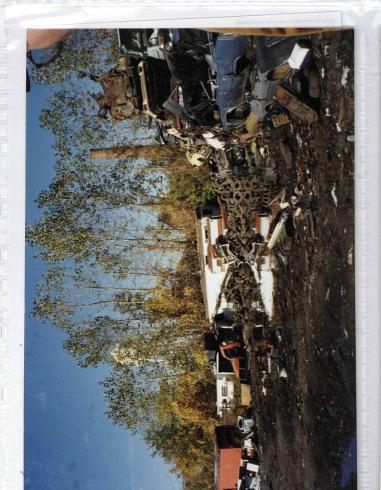
DIRECTION SOUTHWEST

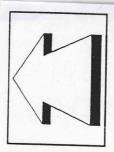
WEATHER SUNNY, HIGH 30'S TO LOW 40'S

PHOTOGRAPHER: JOHN HADDY

SAMPLE ID# (IF APPLICABLE)

DESCRIPTION USED AUTOMOBILES
AND TIRES.





PHOTOGRAPHY LOG SHEET

SITE SUPER AUTO SALVAGE YARD

DATE OCTOBER 13, 1993

DIRECTION WEST

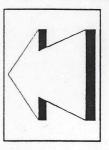
WEATHER SUNNY, HIGH 30'S TO LOW 40'S

PHOTOGRAPHER: JOHN NADOY

SAMPLE ID# (IF APPLICABLE)

PONDED WATER.





SITE SUPER AUTOSAWAGE YARD

DATE OCTOBER 13, 1993

DIRECTION EAST

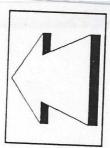
WEATHER SUNNY, HIGH 20'S TO LOW 40'S

PHOTOGRAPHER: JOHN NADDY

SAMPLE ID# (IF APPLICABLE)
NOT APPLICABLE

FLOOR OF BUILDING.





PHOTOGRAPHY LOG SHEET

SITE SUPER AUTO JAWAGE TARO

DATE <u>OCTOBE</u> 13, 1993

DIRECTION SOUTH

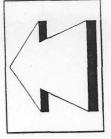
WEATHER SUNNT, HIGH 30'S TO LOW 40'S

PHOTOGRAPHER: JOHN NADDY

SAMPLE ID# (IF APPLICABLE)

WHERE WASE OL IS DRUMED AND BURNED WHEN NEEDED





SITE SUPER AUTO SAWAGE YARD

DATE OCTOBER 13, 1993

DIRECTION WEST

WEATHER SUNNY, HIGH 30'S TO WW 40'S

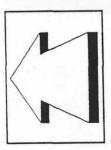
PHOTOGRAPHER: JOHN NADDY

SAMPLE ID# (IF APPLICABLE)

NOT APPLICABLE

DESCRIPTION USED AUTO PAPES ON SITE WITH SOME OUT PRESIDUE ON GROUND.





PHOTOGRAPHY LOG SHEET

SITESUPER AUTOJALVAGE YARD

DATE OCTOBER 13, 1993

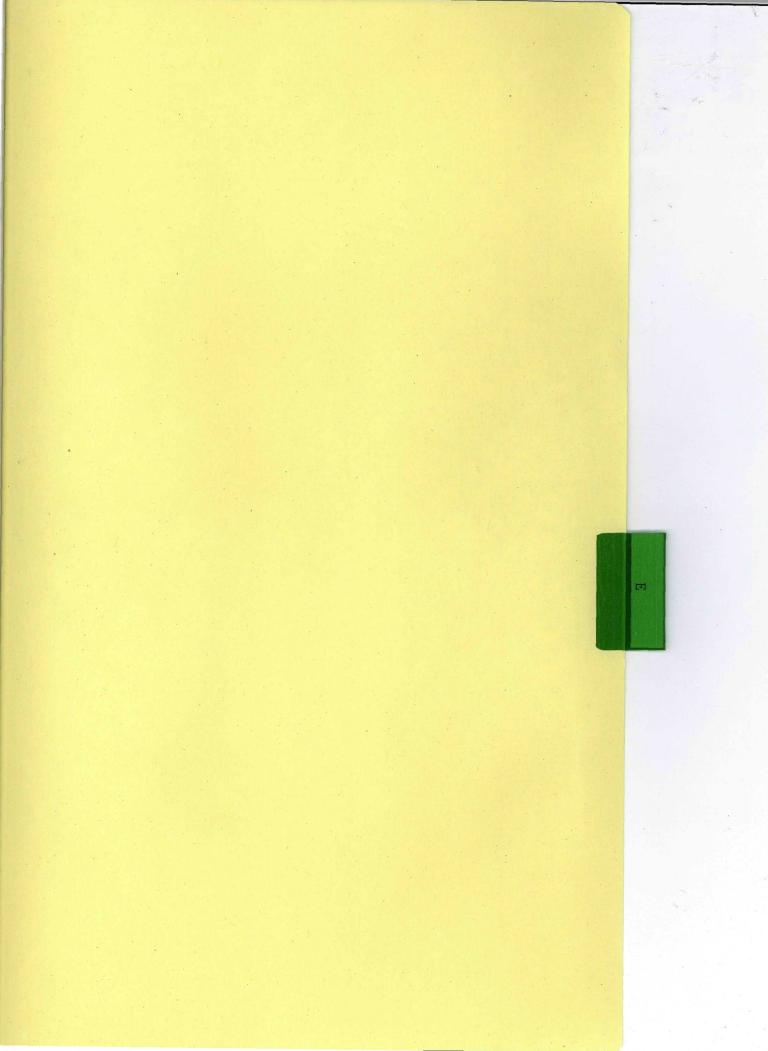
DIRECTION SOUTHWEST

WEATHER SUNNY, HIGH 30'S TO LOW 40'S

PHOTOGRAPHER: JOHN NADDY

SAMPLE ID# (IF APPLICABLE)

DESCRIPTION USED AUTOMOBILES
AND AMGENERAL IN THE
PISTANCE:



SDMS US EPA Region V

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SDMS US EPA Region V

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